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TRANSPORTATION DEVELOPMENT CENTRE

COMPUTER SYSTEMS REQUIREMENTS AND RECOMMENDATIONS

VOLUME 1 OF 4

EXECUTIVE SUMMARY AND USER REQUIREMENTS

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TRANSPORTATION DEVELOPMENT CENTRE

COMPUTER SYSTEMS REQUIREMENTS AND RECOMMENDATIONS

EXECUTIVE SUMMARY

DIGI-PLUS Inc.

January 12, 1989

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TRANSPORTATION DEVELOPMENT CENTRE
COMPUTER SYSTEMS REQUIREMENTS AND RECOMMENDATIONS
EXECUTIVE SUMMARY

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1. BACKGROUND

TDC has over the past ten years developed an integrated, computer based Management Information System (MIS) which covers the Financial and Project Management requirements essential for TDC's ongoing R&D program. The present MIS runs on a Digital Equipment PDP-11/44 minicomputer under the RSX-11 real-time operating system. The system was custom developed in PROCOL 4GL environment to meet the unique TDC requirements and the constraints of development time and cost.

In a survey of the Regional information systems by the Headquarters Informatics Group (DGCI), concerns were expressed with respect to TDC's present management information systems on the basis that:

i. the existing TDC hardware and software environment is not compatible with other Transport Canada's computer systems and networks based on IBM equipment;

ii. the present MIS is vulnerable due to the exclusive reliance on a single source application development, maintenance and support; and

iii. the costs involved in operating and maintaining the MIS seem high and require further investigation and analysis.

To respond to these concerns and establish a sound basis for the future evolution of its information systems and facilities, TDC has carried out a comprehensive Computer Systems Requirements and Recommendations Study based on the DCI Systems Development Life Cycle (SDLC) standards, consisting of:

(1) SDLC Phase I User Requirements Study that included a complete review of the existing information systems and procedures with special emphasis on the MIS, and an in-depth analysis and definition of the TDC user requirements for a five year period; and

(2) SDLC Phase II Feasibility Study that included a thorough analysis and evaluation of alternative methods of meeting TDC user requirements, and recommendation of the most appropriate and cost-effective solution.

1. BACKGROUND (CONT'D)

The resulting report is intended to serve as the User Requirements/Feasibility Study/Technical Specification of an overall TDC Informatics Plan, and will be used in the decision making processes related to the future design and development of TDC information systems and facilities.

2. EXISTING SYSTEMS

Management Information System (MIS)

MIS was developed over a period of fifteen years, starting with a core application in the service bureau environment for financial management of TDC R&D related contracts. Beginning in 1978, MIS was converted to a DEC microcomputer, and functionally expanded over the years to cover the following applications:

- operational planning of the R&D activities based on the annual budgetary allocations and outside funding, and the Department's research objectives and priorities;
- financial management of R&D contracts with the funding sponsors and performing organizations;
- definition, selection, contracting and management of R&D projects performed for the most part by outside organizations;
- financial planning, management and reporting related to R&D and O&M budgets, funds and expenditures via a custom developed general ledger system;
- maintenance and monitoring of the completion status of R&D projects based on TDC operational procedures;
- management of the inventory and distribution of the research publications; and
- planning, maintenance, monitoring and reporting of the TDC person-year utilization.

With exception of the General Ledger system which has been down-loaded to an IBM micro-computer, the present MIS is operated on a relatively obsolete and undersized PDP-11/44 minicomputer supporting 22 on-line screens and 4 printers, in RSX-11M-PLUS Real-Time Operating System and PROCOL 4GL environment.

TDC Research Library Systems

In support of the TDC R&D activities, the Research Library presently operates the following applications on a single micro-computer:

2. EXISTING SYSTEMS (CONT'D)

- University of Toronto Library Automation Timesharing System (UTLAS), in support of its own publications classification program, and the Project Officers' needs for research literature searches and abstracts borrowing program;
- Library Acquisition System, used for ordering and tracking of books and monographs, as well as subscriptions for journals;
- Library Mailing List System, used for managing the dissemination program of the research publications resulting from TDC's research and development projects.

Both, Library Acquisition and Mailing List Systems have been internally developed in Informix relational database and 4GL environment.

Desktop Publishing System

In support of its research publications program and other internal publishing and graphics needs, TDC is leasing an Interleaf Desktop Publishing System based on the Apollo microcomputer hardware and Unix operating system.

Project Officers' Productivity Tools

In support of their activities involving identification, definition, planning, negotiation, contracting, evaluation and management of R&D projects and programs, many Project Officers are using a number of professional productivity tools on the existing IBM PCs and compatibles procured over the years as part of R&D projects or as TDC internal acquisitions. The packages most often used include word processing, electronic spreadsheet, project planning and management, relational database, and PC communications packages for communicating with performing organizations.

Text Processing Facilities

In support of its needs for text processing related to preparation of R&D contracts and project documents, and other larger and more complex correspondence, TDC have acquired an AES single user word processor and printer.

2. EXISTING SYSTEMS (CONT'D)

Communications With Ottawa

TDC is also using an IBM 3174 Communications Controller and a 3278 Workstation for accessing Transport Canada's mainframe information systems in Ottawa, including the Financial and Material Control Systems. Since recently, the 3174 controller is also being used in pilot project involving the use of the mainframe DISOSS distribution services by EDTDC and Division Chiefs via IBM PCs and compatibles.

3. PROBLEMS

Our review of TDC information systems and procedures has established a number of major problem areas, particularly in the area of the Management Information System (MIS), briefly summarized here in the order of importance:

1. The poor performance of the existing MIS application is presently the greatest constraint that severely limits its most effective use: we observed on-line response times of routine data entry and update transactions and simple inquiries on the order of several minutes. The major causes of this unusually poor performance are the obsolete PDP 11 hardware and software environment, poor technical implementation and inherent structural deficiencies of the PROCOL 4GL tools, undersized single disk hardware configuration, and poor MIS database design.

2. While the present MIS application provides adequate functionality to the Financial Services, and for the most part to the Administrative Services, it falls far short of the functional needs of the Project Officers. The usefulness of the MIS database information is also limited by database design and PROCOL architecture.

3. The MIS user interface is poorly structured and documented in most areas: in one case we observed 40 randomly interspersed on-line maintenance, reporting, and batch processing functions on a single user menu, rendering the system hazardous to use.

4. The MIS system and database integrity also involve major problems: the routine execution of many on-line programs results in incomprehensible error messages and unpredictable results, resulting in incomplete database information and frequent recourse to SSM support staff; the operating system causes frequent crashes of application programs affecting the database integrity and system availability due to corruption of files and lengthy recovery procedures; the PROCOL database manager does not provide the standard data integrity features which would guarantee physical and logical data integrity.

5. The user and system documentation are based on poor standards, are incomplete, and are often not up to date. This increases the risks to the TDC information systems inherent in the dependence on the single vendor support.

3. PROBLEMS (CONT'D)

6. Our review of the SSM contractor's performance has established problem areas in practically all areas: incomplete and poorly implemented 4GL PROCOL product, absence of adequate development and documentation standards, insufficient frequency of database and program library back-up procedures, and inadequate project reporting procedures.

7. Our review of the TDC contracting and management procedures related to the single source SSM contracts for facilities management, application development and maintenance, and user support also shows weaknesses in the areas of cost justification and accountability mainly due to the fact that the TDC Information Systems Coordinator is a part time assignment carried out over time by various TDC professional staff, and by the absence of an experienced data processing authority to oversee the contractor.

4. USER REQUIREMENTS

The following summarizes the TDC user requirements as defined in the course of the User Requirements Study in the order of TDC priorities:

1. Replace the obsolete MIS hardware and software with state-of-the-art technology consisting of an MIS database computer capable of supporting up to 16 concurrent users, a local area network which will integrate all of TDC workstations and systems, and provide a gateway to TCN for access of the mainframe information systems and devices.
2. Convert and migrate the existing MIS application to the new hardware and PROCOL Unix software environment for an interim period (approximately two years) until the MIS application is redeveloped on the basis of sound technology and standards.
3. Provide EDTDC and Division Chiefs with intelligent workstations for access of the mainframe DISOSS services via the TCN Gateway.
4. Provide the Project Officers with intelligent workstations, a set of professional productivity tools, and the required training to ensure their effective use. Interconnect the workstations via the TDC local area network, and provide them with access to the MIS application and electronic mail system.
5. Redevelop the existing MIS application to meet the full functional requirements of all TDC users areas, on the basis of an industry standard relational database and 4GL environment and sound development standards compatible with Transport Canada Informatics standards.
6. Upgrade the TDC Research Library systems by replacing the existing IBM PC/XT with a PC/AT compatible, a laser printer, and a second PC/AT compatible for on-line access of UTLAS and other external systems.
7. Upgrade the existing, leased Interleaf Desktop Publishing system with additional access ports and two additional intelligent work-stations for use by the Technical Editor and data entry clerk, and provide additional document storage space via a LAN gateway to the TDC local area network and MIS system.

4. USER REQUIREMENTS (CONT'D)

8. Provide the TDC secretarial staff with intelligent workstations, standard TDC word processing and personal services software, and implement TDC electronic mail system based on the TDC local area network, with eventual gateway to the mainframe DISOSS services.

9. Provide the TDC Financial and Administrative Services Managers with intelligent workstations integrated into the TDC local area network, and a set of professional productivity tools.

5. ALTERNATIVE SOLUTIONS CONSIDERED

In the course of the Feasibility Study we have considered the following alternative solutions:

1. Maintaining the status quo: rejected since it does not meet any of TDC mandatory or optional requirements, and does not enable TDC to achieve its operational and organizational objectives.

2. Using the Ottawa mainframe: eliminated because 95 % of TDC processing requirements are of interactive and local nature, and because of inability to migrate the existing MIS application for an interim period.

3. Using the existing Regional Informatics (Dorval) processor: eliminated due to lack of the required capacity and published upgrade path that would meet TDC's requirements.

4. An additional Regional Informatics Processor located in Dorval, serving the TDC on-line users via a remote communications controller and a Token Ring local area network.

5. A TDC Local Processor with directly connected local CRT terminals and intelligent workstations (without a local area network), and on-line communications to TCN via the Regional (Dorval) communications processor.

6. A combination of a TDC Local Processor and a separate LAN Server integrating all TDC workstations, systems and devices, and a TCN Gateway via Dorval.

7. A TDC Local Processor with an integrated attachment for a local area network integrating all intelligent workstations and devices, and a gateway to TCN via Dorval.

6. EVALUATION METHODOLOGY

The four viable alternatives (4 to 7 above) were evaluated against a set of mandatory requirements which had to be met by all solutions, and a set of optional requirements which could be met to varying degrees. Each requirement was assigned a number of evaluation points based on its dollar or performance value.

All viable alternatives were costed at the detailed and summary levels by category of expenditures such as hardware, software, development etc., as well as on the basis of specific user requirements in the order of TDC priorities and implementation critical path.

The total number of evaluation points earned by each solution was then divided by the total cost of ownership and operation over a five year period, thus obtaining the most cost/performant solution which consists of a Local TDC Processor ('super micro'), a high performance TDC Local Area Network, and a TCN Gateway.

In addition, we have evaluated the implementation risks associated with each alternative, and based our definition of alternatives on equipment and software which are well proven in comparable applications, or have been tested by Transport Canada DCI and approved as meeting the TCN standards.

7. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

On the basis of the findings and results of the User Requirements and Feasibility Studies we conclude that:

- the present TDC information systems and facilities are based on obsolete technology which does not provide the required level of performance, can not be upgraded or expanded to meet TDC operational objectives, is costly to maintain, and presents unacceptable risks to the longer term viability of vital TDC information systems;
- in order to meet its operational goals, particularly under the next year's increased R&D budget levels, and under the constraints of the Department's personnel down-scaling program, TDC must invest at this point in renewal and upgrading of its information systems and facilities.

The Recommended Solution

We recommend the Local Processor/LAN solution based on super micro-processor(s) because:

- this configuration best meets all the TDC mandatory requirements, and the optional requirements;
- it offers the best overall system performance, and is the least expensive of all viable solutions;
- it does not pose unacceptable risks since it can be provided by a single hardware/software vendor with single vendor support, and equipment already tested by Transport Canada DCI and approved as meeting TCN standards.

8. COST SUMMARY

The following two tables summarize the costs of the recommended solution by type of expenditures, and by specific TDC user requirements in the order of TDC implementation priorities.

Table 1: Cost Summary By Type Of Expenditures

Cost Component	Capital Cost	Installation Cost	Maintenance Cost
1. System Hardware	278,176	3,560	27,100
2. Purchased Software	101,834	n/a	12,931
3. Migration of Existing MIS	20,000	n/a	70,000
4. MIS Redevelopment and Implementation	333,500	n/a	38,400
5. Communications Equipment and Lines	n/a	600	3,900
6. User and Technical Training	n/a	51,600	n/a
7. System Operation and Support	n/a	n/a	100,000
TOTAL (Old MIS)	733,510	55,760	213,931
			or
TOTAL (New MIS)			182,331

Table 2: Cost Summary By Priority and Implementation Activity

Implementation Activity	Time Months	Capital Cost	Maintenance Cost
1. Initial System Hardware & Software	6	102,091	10,495
2. MIS Detailed Analysis Procurement	3	n/a	n/a
3. MIS Detailed Analysis Execution	6	94,000	n/a
4. Hardware & Software Installation	1	14,500	n/a
5. Migration of The Existing MIS	3	37,415	73,600
6. Implementation of DISOSS Services for EDTDC & Division Chiefs	2	36,804	6,818
7. MIS Development & Implementation, Procurement	3	42,120	6,581
8. New MIS Development Execution	9	196,000	n/a
9. MIS Implementation Execution	4	47,500	38,400
10. Implementation of Project Officers' productivity tools	12	134,935	8,595
11. TDC Library Systems Upgrade	6	6,000	480
12. Office Automation Hardware & Software Procurement	3	31,255	4,657
13. Office Automation Implementation	9	10,500	n/a
14. Upgrade of TDC Desktop Publishing System	3	23,220	1,795
15. Intelligent Workstations for Financial & Admin Managers	3	12,930	910
16. TDC Support Personnel Costs	12	n/a	100,000
TOTAL (Old MIS)		789,270	213,931
			or
TOTAL (New MIS)			182,331

9. IMPLEMENTATION TIMETABLE

The Gant Charts below provide the graphic representation of the tentative TDC implementation plan which is based on TDC need for phased implementation of the proposed systems and upgrades due to:

a. the expected annual availability of funds for the new hardware, software and systems development, in addition to the funds required to operate and support the existing systems;

b. the ability of the TDC organization to assimilate the new systems and the associated training while still operating with the existing systems;

c. the inherent lead times associated with the project and budgetary approvals, hardware and software procurement cycles, and MIS detailed analysis, development and implementation cycles.

The schedule is shown in months of elapsed time relative to the start of the procurement cycle after the TDC and Transport Canada approval.

TDC Systems Implementation Schedule - YEAR 1

```
                          0     1     2     3     4     5     6     7     8     9     10    11    12
Implementation Activity   !     !     !     !     !     !     !     !     !     !     !     !     !
--------------------------------------------------------------------------------------------------
                          !     !     !     !     !     !     !     !     !     !     !     !     !
 1. Initial Hardware and  !_____!_____!_____!_____!_____!_____!     !     !     !     !     !     !
    Software Procurement  !     !     !     !     !     !     !     !     !     !     !     !     !
                          !     !     !     !     !     !     !     !     !     !     !     !     !
 2. MIS Detailed Analysis !_____!_____!_____!     !     !     !     !     !     !     !     !     !
    Procurement           !     !     !     !     !     !     !     !     !     !     !     !     !
                          !     !     !     !     !     !     !     !     !     !     !     !     !
 3. MIS Detailed Analysis !     !     !     !_____!_____!_____!_____!_____!_____!     !     !     !
    Project Execution     !     !     !     !     !     !     !     !     !     !     !     !     !
                          !     !     !     !     !     !     !     !     !     !     !     !     !
 4. Phase I Hardware and  !     !     !     !     !     !     !_____!     !     !     !     !     !
    Software Installation !     !     !     !     !     !     !     !     !     !     !     !     !
                          !     !     !     !     !     !     !     !     !     !     !     !     !
 5. Migration of Existing !     !     !     !     !     !     !     !_____!_____!_____!     !     !
    MIS to New Hardware   !     !     !     !     !     !     !     !     !     !     !     !     !
                          !     !     !     !     !     !     !     !     !     !     !     !     !
 6. Implementation of     !     !     !     !     !     !     !     !_____!_____!     !     !     !
    DISOSS Services       !     !     !     !     !     !     !     !     !     !     !     !     !
                          !     !     !     !     !     !     !     !     !     !     !     !     !
 7. Procurement of MIS    !     !     !     !     !     !     !     !     !     !_____!_____!_____!
    Development Contract  !     !     !     !     !     !     !     !     !     !     !     !     !
                          !     !     !     !     !     !     !     !     !     !     !     !     !
--------------------------------------------------------------------------------------------------
                          0     1     2     3     4     5     6     7     8     9     10    11    12
```

TDC Systems Implementation Schedule - YEAR 2

```
                          12    13    14    15    16    17    18    19    20    21    22    23    24
Implementation Activity   !     !     !     !     !     !     !     !     !     !     !     !     !
--------------------------------------------------------------------------------------------------
                          !     !     !     !     !     !     !     !     !     !     !     !     !
 8. MIS Development       !_____!_____!_____!_____!_____!_____!_____!_____!_____!     !     !     !
    Project Execution     !     !     !     !     !     !     !     !     !     !     !     !     !
                          !     !     !     !     !     !     !     !     !     !     !     !     !
 9. Implementation of the !     !     !     !     !     !     !     !     !     !_____!_____!_____!
    New MIS System        !     !     !     !     !     !     !     !     !     !     !     !     !
                          !     !     !     !     !     !     !     !     !     !     !     !     !
10. Implementation of     !_____!_____!_____!_____!_____!_____!_____!_____!_____!_____!_____!_____!
    Project Officers'     !     !     !     !     !     !     !     !     !     !     !     !     !
    Productivity Tools    !     !     !     !     !     !     !     !     !     !     !     !     !
                          !     !     !     !     !     !     !     !     !     !     !     !     !
--------------------------------------------------------------------------------------------------
                          12    13    14    15    16    17    18    19    20    21    22    23    24
```

TDC Systems Implementation Schedule - YEAR 3

```
                         24  25  26  27  28  29  30  31  32  33  34  35  36
Implementation Activity__!___!___!___!___!___!___!___!___!___!___!___!___!
                         !   !   !   !   !   !   !   !   !   !   !   !   !
11. TDC Library Systems  !   !   !   !___!___!___!   !   !   !   !   !   !
    Upgrade              !   !   !   !   !   !   !   !   !   !   !   !   !
                         !   !   !   !   !   !   !   !   !   !   !   !   !
12. Office Automation    !___!___!___!   !   !   !   !   !   !   !   !   !
    Hardware & Software  !   !   !   !   !   !   !   !   !   !   !   !   !
    Procurement          !   !   !   !   !   !   !   !   !   !   !   !   !
                         !   !   !   !   !   !   !   !   !   !   !   !   !
13. Office Automation    !   !   !   !___!___!___!___!___!___!___!___!___!
    Implementation       !   !   !   !   !   !   !   !   !   !   !   !   !
                         !   !   !   !   !   !   !   !   !   !   !   !   !
14. Upgrade of Interleaf !   !   !   !   !   !   !___!___!___!   !   !   !
    Publishing System    !   !   !   !   !   !   !   !   !   !   !   !   !
                         !   !   !   !   !   !   !   !   !   !   !   !   !
15. Intelligent Work-    !   !   !   !   !   !   !   !   !   !___!___!___!
    stations for TDC     !   !   !   !   !   !   !   !   !   !   !   !   !
    Managers             !   !   !   !   !   !   !   !   !   !   !   !   !
_________________________!___!___!___!___!___!___!___!___!___!___!___!___!
                         24  25  26  27  28  29  30  31  32  33  34  35  36
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TRANSPORTATION DEVELOPMENT CENTRE

COMPUTER SYSTEMS REQUIREMENTS AND RECOMMENDATIONS

USER REQUIREMENTS REPORT

DIGI-PLUS Inc.

January 12, 1989

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1. INTRODUCTION

1.1 BACKGROUND

TDC has over the past several years developed an integrated, computer based Management Information System (MIS) which incorporates both the Financial and Project Management information processing requirements essential for TDC's ongoing R&D program. The present MIS system runs on a Digital Equipment (DEC) PDP-11/44 minicomputer under the RSX-11M-PLUS real-time operating system. The MIS application programs were custom developed in PROCOL quasi-relational data base and fourth generation language to meet TDC's requirements with respect to administrative, financial and contractual matters.

Transport Canada's functional authority for electronic data processing (DGCI) has expressed concerns with respect to TDC's present management information systems on the basis that:

a. TDC's hardware/software environment is not compatible with other Transport Canada's Informatics environments based on IBM equipment, since DGCI will not support the communications between the Transport Canada Network (TCN) and the DEC system;

b. TDC's present information systems are vulnerable due to their exclusive reliance on a single source application software development and support; and

c. the costs involved in operating and maintaining TDC's present computer systems seem high and require further investigation and analysis.

In order to respond to these concerns, TDC has carried out a comprehensive Computer Systems Requirements and Recommendations Study that included:

a. a complete evaluation of the existing management information systems, operations and procedures;

b. an in-depth analysis and definition of the TDC users' information systems requirements;

c. an evaluation of alternative methods of meeting TDC's requirements, and the recommendation of the most cost-effective and appropriate solution; and

d. definition of generic hardware and software specifications based on the recommended solution.

The study and report are intended to serve as the User Requirements/Feasibility Study/Technical Specification of an overall TDC Informatics Plan, and will be used in the decision making processes related to the design, development and implementation of TDC's new management information systems.

1.2 PURPOSE AND SCOPE

1.2.1 Purpose of Study

The purpose of the TDC User Requirements Phase study is:

1. To evaluate and document the existing TDC information systems, with particular emphasis on the Management Information System (MIS), in terms of:
    - a. system functions and user responsibilities;
    - b. data elements and their sources;
    - c. system outputs, their purpose, and the recipients of the information;
    - d. current data storage and processing volumes;
    - e. interactions with other systems and processes;
    - f. performance of the existing systems from the perspective of user requirements;
    - g. integrity and up-time of the existing systems;
    - h. current operations and maintenance procedures; and
    - j. information systems support staffing relative to the operations, maintenance, and user support functions.
2. To document the major problems with the existing TDC information systems, including:
    - a. the main factors that prevent TDC users from effectively using the present systems in the performance of their functions;
    - b. the impact of the present system problems on the performance of specific user areas, and on overall TDC operations; and
    - c. the quantitative assessment of the present computer systems deficiencies in terms of dollar values and person-years, where possible.
3. To define and document TDC's information systems requirements in terms of:

    a. the information systems objectives in order of priority and importance to the organization;

    b. the source, function and destination of all major data flows;

    c. the required output documents and reports, their purpose, and the user areas affected; and

    d. interactions with other systems within and outside TDC.

4. Assessment of the impact of the proposed new systems and processes on the TDC environment relative to:

    a. the general attitude of the users toward changes in their work environment resulting from the implementation of the recommended information systems improvements;

    b. the impact of the proposed information systems on the current guidelines, policies and collective agreements;

    c. the mechanics of the two-way communication for all levels of potential users within and outside the TDC user environment; and

    d. the existing environmental conditions at the TDC site relative to the computer and communications hardware.

5. Recommendations with respect to TDC's information systems requirements that should be included in the Feasibility Study, and their relative priority of implementation based on the TDC organizational objectives.

1.2.2 Organizations Affected

The following organizations within the Transport Canada organizational structure were affected by this study:

1. All functional areas of the Transportation Development Centre. (Please refer to Figures 3 to 10 inclusive, TDC Organization Charts.)

2. Director General Research and Development (DGRD). (Please refer to Figure 1, TC/TDC Organization Chart.)

3. Director General Communications and Informatics (DGCI). (Please refer to Figure 2, TC DGCI Organization Chart.)

1.2.3 User Areas Investigated

In the course of this Study, we have investigated the following user areas:

1. All functional areas of the Transportation Development Centre (TDC), including:
    a. Executive Director (EDTDC);
    b. Chiefs of Technology Divisions, Modal Coordinators, and Senior Project Officers;
    c. Financial Services;
    e. Administrative Services, including:
        - Research Library;
        - Purchasing;
        - Central Registry;
        - Publications; and
        - Technical Editors.
2. Director General Research and Development (DGRD).

1.2.4 Systems and Processes Examined

1.2.4.1 Management Information System (MIS)

1. Director General Research and Development (DGRD's) Menu.
2. Executive Director's (EDTDC's) Menu.
3. Transportation Development Chiefs' Menus.

4. Modal Coordinators' Menu.
5. Transportation Development Officers' Menu.
6. Financial Services' MIS and G/L Systems Menus.
7. Administrative Support Services' Publications Management (SGP) and Project Completion Phase (PCP) Subsystems.

1.2.4.2 Research Library Systems

1. University of Toronto Library Automation System (UTLAS).
2. Library Acquisition System for Journals, Books and Abstracts.
3. Mailing List System (MLS).

1.2.4.3 Administrative Support Systems

1. Person-Month Utilization (PMU) System.

1.2.4.4 Publication Systems (Desktop Publishing)

Interleaf Electronic Publishing System.

1.3 PERSONNEL

The Organization Charts in Figures 1 through 10, inclusive, show the Transport Canada/TDC organizational structure pertaining to this study. The following narrative summarizes the reporting relationships between the TC/TDC entities affected by this study, and their major responsibilities.

1.3.1 Transport Canada/TDC Organization Chart

Figure 1, the TC/TDC Organization Chart shows the organizational structure and reporting relationship between Transport Canada and the Transportation Development Centre.

1.3.2 TC Communications and Informatics Branch

Figure 2 shows the interim organizational structure of Transport Canada's Communications and Informatics Branch as of September 1987.

With respect to TDC's Information Systems and Services, the Headquarters Informatics Group is responsible for planning, organizing, directing, coordinating and controlling:

- development of computer-based information and operational support systems;
- promulgation and enforcement of Department-wide Informatics policies, procedures, standards and guidelines;
- functional compatibility of TDC's Informatics facilities and information systems with the overall departmental systems network architecture, and compliance with the Department's policies, standards and procedures;
- promulgation of, and ensuring TDC's compliance with the Department's Long-Range Systems Plan, and the Information and Technology Systems Plan.

The above responsibilities are presently discharged via the following five Divisions reporting to the Director General Communications and Informatics:

- Office Automation Services;
- Informatics Facilities;

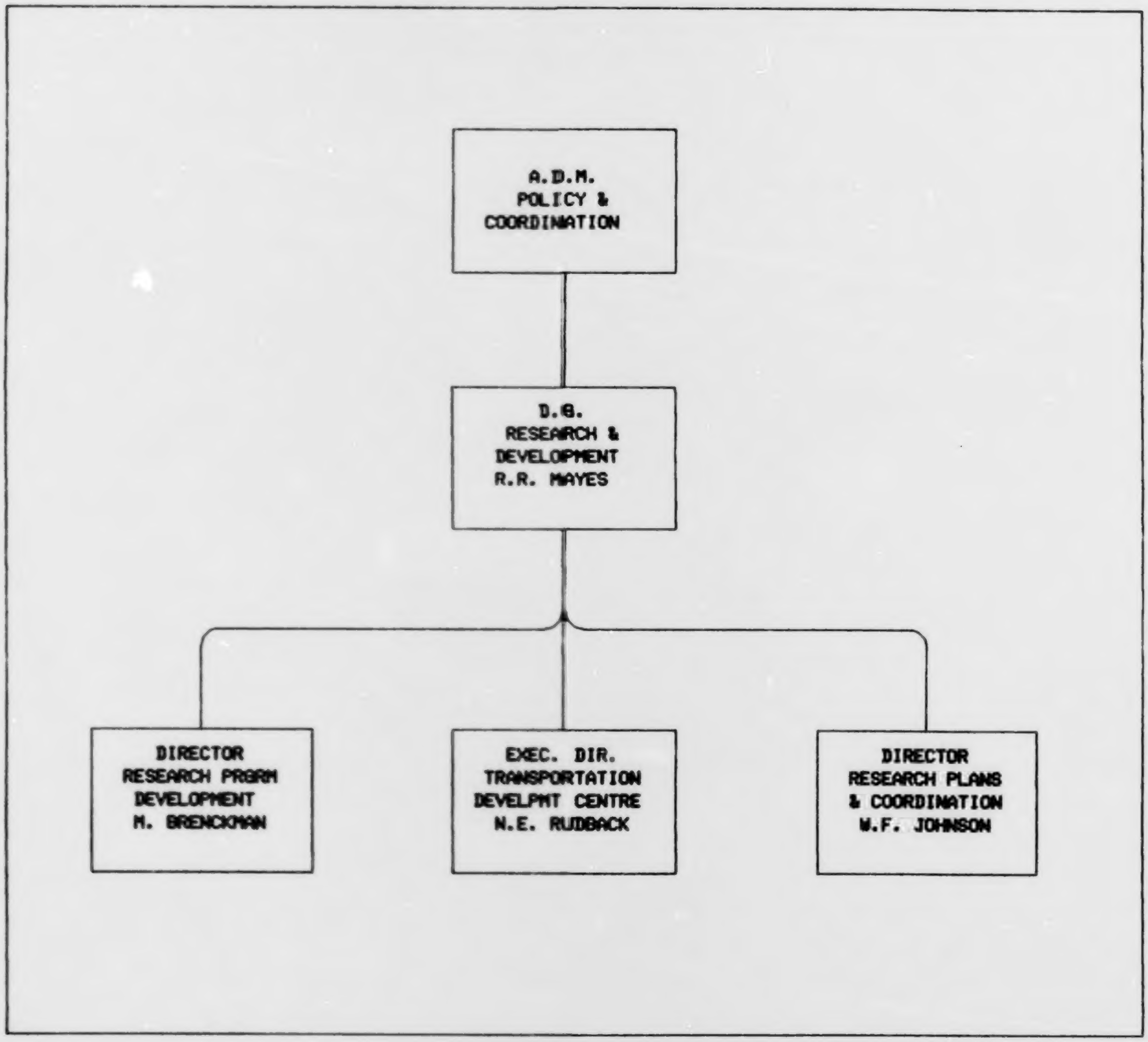

A.D.M.
POLICY &
COORDINATION
D.G.
RESEARCH &
DEVELOPMENT
R.R. MAYES
DIRECTOR
RESEARCH PRGRM
DEVELOPMENT
M. BRENCKMAN
EXEC. DIR.
TRANSPORTATION
DEVELPMT CENTRE
N.E. RUDBACK
DIRECTOR
RESEARCH PLANS
& COORDINATION
W.F. JOHNSON

FIGURE 1: TC/TDC ORGANIZATION CHART

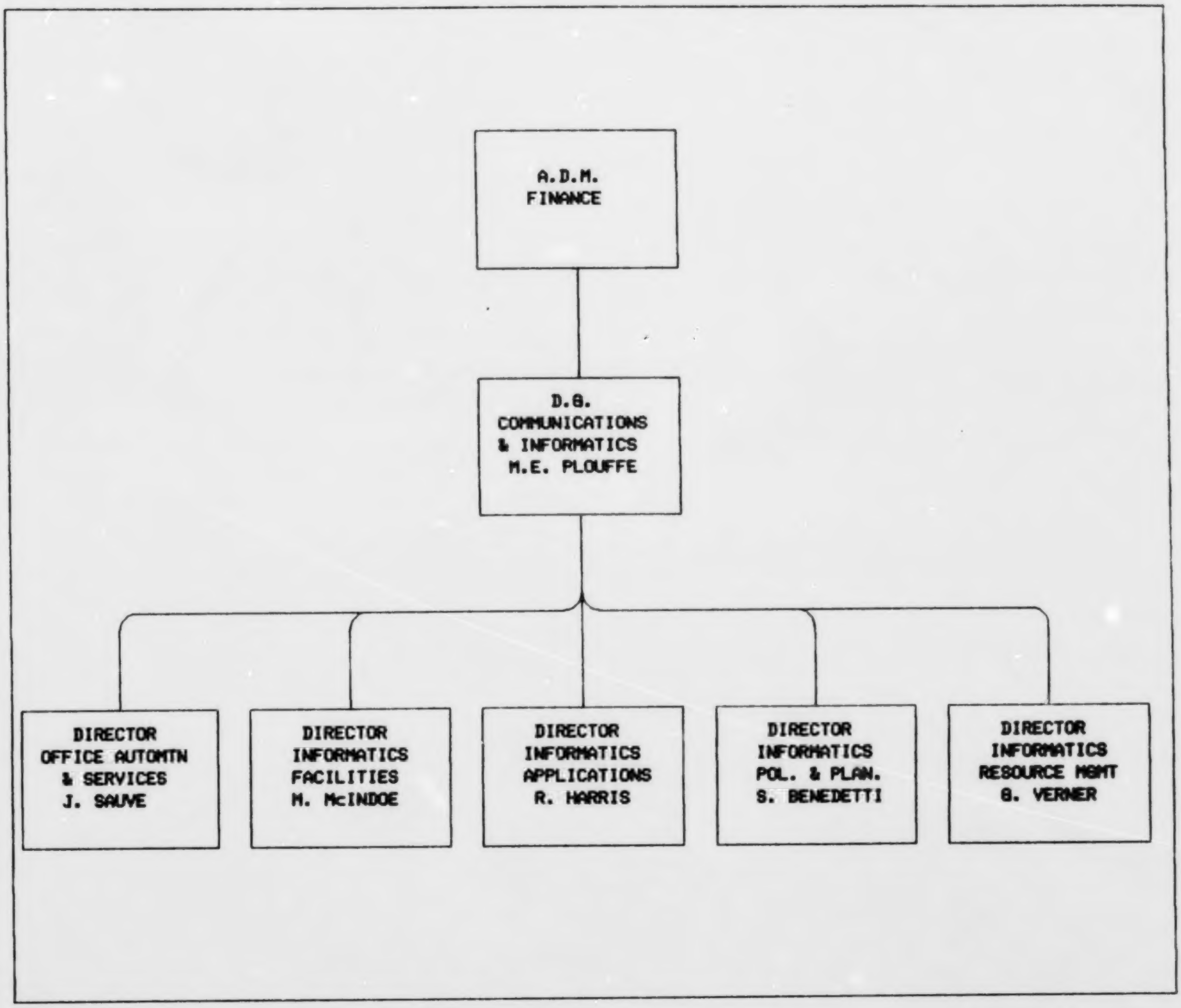

A.D.M.
FINANCE
D.G.
COMMUNICATIONS
& INFORMATICS
M.E. PLOUFFE
DIRECTOR
OFFICE AUTOMTN
& SERVICES
J. SAUVE
DIRECTOR
INFORMATICS
FACILITIES
M. McINDOE
DIRECTOR
INFORMATICS
APPLICATIONS
R. HARRIS
DIRECTOR
INFORMATICS
POL. & PLAN.
S. BENEDETTI
DIRECTOR
INFORMATICS
RESOURCE MGMT
G. VERNER

FIGURE 2: TC ORGANIZATION CHART

COMMUNICATIONS & INFORMATICS

- Informatics Applications;
- Informatics Policy and Planning; and
- Informatics Resource Management.

1.3.2.1 Office Automation Services

The Office Automation Services Division is responsible for:

- provision of analytical and technical services in definition of user requirements for computerized business, scientific, operational support and office automation services, including the initiation and conduct of feasibility studies on request;
- provision of counsel, guidance and assistance to Informatics users in the acquisition of computer hardware/software and systems development services;
- management of the Department's training programs, and planning, organizing and controlling the implementation of administrative telecommunications services.

In support of its roles and responsibilities, the Office Automation Service consists of the following four components:

- Informatics Training;
- User Support Services;
- Informatics Micro-Assist Services; and
- Administrative Telecommunications Services.

1.3.2.2 Informatics Facilities

The Informatics Facilities Division is responsible for:

- management of Transport Canada Informatics facilities, including the planning, provision and control of technical and operations support;
- planning, acquisition, installation and operation of Transport Canada Network of distributed processing facilities, and the administration of departmental data resources;

- evaluation of Informatics facilities to ensure the most appropriate combination of Transport Canada computer systems and facilities, and external EDP services;

- security of Department's Informatics facilities, and provision of the functional guidance on Informatics facilities to all components of Transport Canada.

In support of the above roles and responsibilities, the Informatics Facilities service consists of the following four components:

- Informatics Facilities Planning and Evaluation;

- Central Systems Support;

- Data Base Support; and

- Data Centre Production Services.

1.3.2.3 Informatics Applications

The Informatics Applications Division is responsible for:

- provision of Informatics application services, including the design, development, implementation, operation and maintenance of application systems;

- efficiency, integrity and maintainability of application systems, and maintenance of effective application systems development expertise across the Department;

- provision of functional and technical guidance on Informatics applications to all components of Transport Canada.

In support of its roles and responsibilities, the Informatics Applications Division consists of the following five components:

- Air and Marine Applications;

- Financial Applications;

- Airport Applications;

- Personnel Applications; and

- Material Management Applications.

1.3.2.4 Informatics Policy and Planning

The Informatics Policy and Planning Division has the following mandate in direct support of departmental operations:

- planning, promulgation, implementation, control, and enforcement of policies, guidelines and standards covering acquisition, use, and management of Informatics resources Department-wide;
- directing and coordinating the preparation of the annual departmental Information, Technology and Systems Plan, and maintaining the Departmental Long-Range Systems Plan;
- development of short and long-term automation strategies, investment plans and direction in accordance with the evolving needs of the Department;
- acting as the departmental focal point for liaison with Central Agencies regarding Transport Canada's Informatics strategies, plans and activities;
- recommending corporate systems priorities and schedules to ensure effective assignment of departmental and consulting resources in accordance with Transport Canada program objectives.

In support of its roles and responsibilities, the Informatics Policy and Planning Division consists of the following three sub-components:

- Informatics Planning;
- Informatics Policy; and
- Informatics Quality Assurance and Review.

1.3.2.5 Informatics Resource Management

The Informatics Resource Management Division is responsible for:

- conducting management improvement programs within the Communications and Informatics organization;
- formulation of the Communications and Informatics Communication and Marketing Strategy Plan;
- formulation of the Department's Communications and Informatics costing, pricing and funding mechanisms, and monitoring updating of the PYOP and Human Resources Management Plan;
- provision of administrative, financial and clerical support services to the Communications and Informatics Branch.

1.3.3 TDC Organizational Structure

Figure 3 shows the overall Transportation Development Centre's organizational structure based on the Draft Organization Change Proposal for FY 1988/89.

1.3.3.1 Executive Director, Transportation Development Centre (EDTDC)

The Executive Director of TDC is accountable for the operational planning and management of the activities of the Centre which manages and performs a wide range of transportation research and development studies and projects in fulfillment of the needs of the Department, the Federal Government and the Canadian transportation system.

Reporting to the Executive Director are five positions as follows:

- Chief Advanced Technology;
- Chief Transportation Systems Technology;
- Chief Current Technology;
- Chief Technology Applications; and
- Chief Research, Analysis and Special Programs.

1.3.3.2 Advanced Technology Division

(Please refer to the Organization Chart in Figure 4.)

The Advanced Technology Division is responsible for defining, implementing, managing and performing (on a project basis) research and development activities addressing technology and systems that are not yet operationally deployed.

As well, the Advanced Technology Division is also responsible for operational planning and coordination of TDC's Air Transportation and Track Levitated Vehicle Technology R&D Programs.

Reporting to the Chief of Advanced Technology are presently:

- four Senior Development Officers whose responsibilities include identifying, defining, implementing, managing and performing (on a project basis) the Advanced Technology R&D Projects;

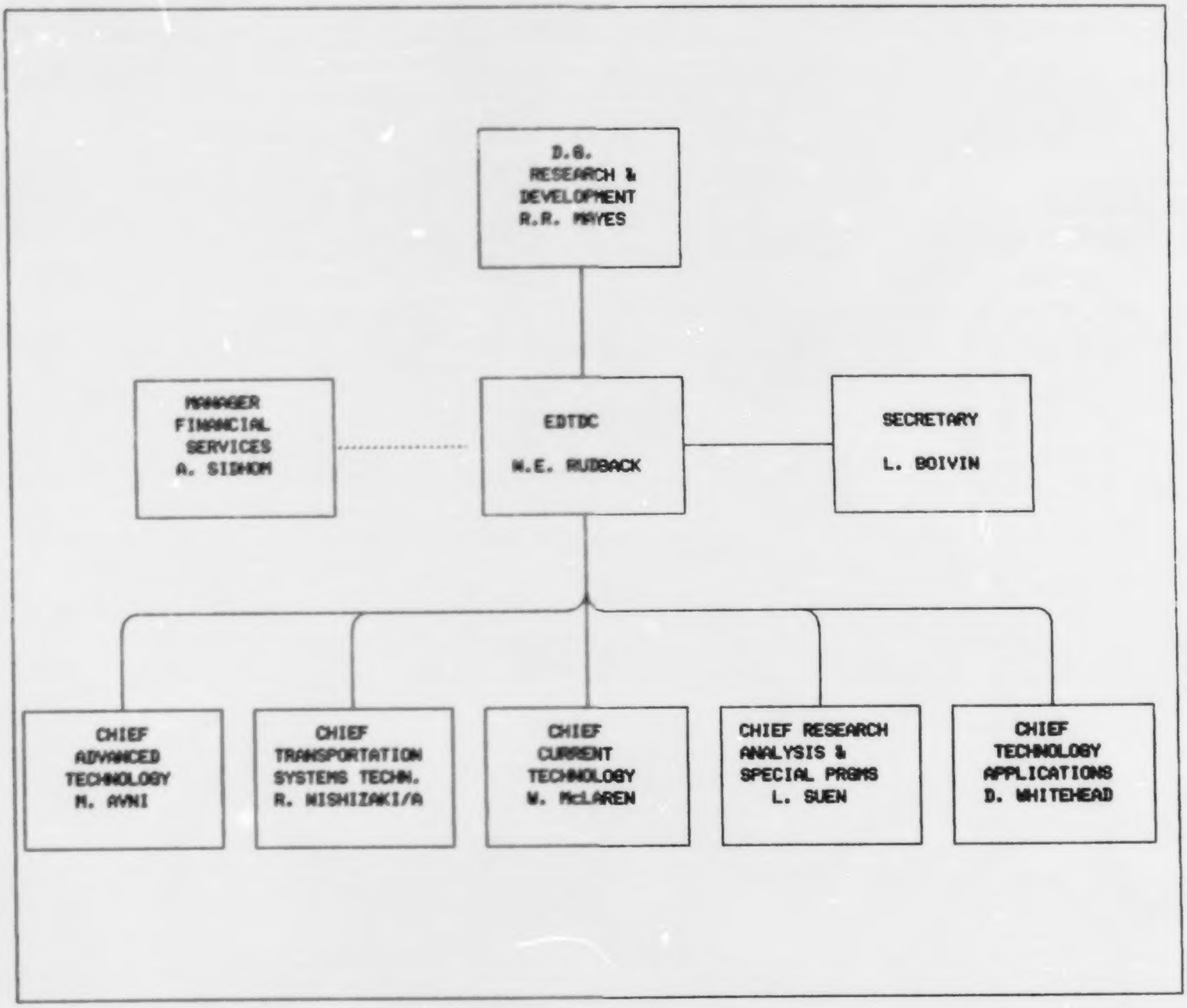

D.G.
RESEARCH &
DEVELOPMENT
R.R. MAYES
MANAGER
FINANCIAL
SERVICES
A. SIDHOM
EDTDC
W.E. RUDBACK
SECRETARY
L. BOIVIN
CHIEF
ADVANCED
TECHNOLOGY
M. AVNI
CHIEF
TRANSPORTATION
SYSTEMS TECHN.
R. NISHIZAKI/A
CHIEF
CURRENT
TECHNOLOGY
W. McLAREN
CHIEF RESEARCH
ANALYSIS &
SPECIAL PRGMS
L. SUEN
CHIEF
TECHNOLOGY
APPLICATIONS
D. WHITEHEAD

FIGURE 3: TDC ORGANIZATION CHART

RESEARCH & DEVELOPMENT

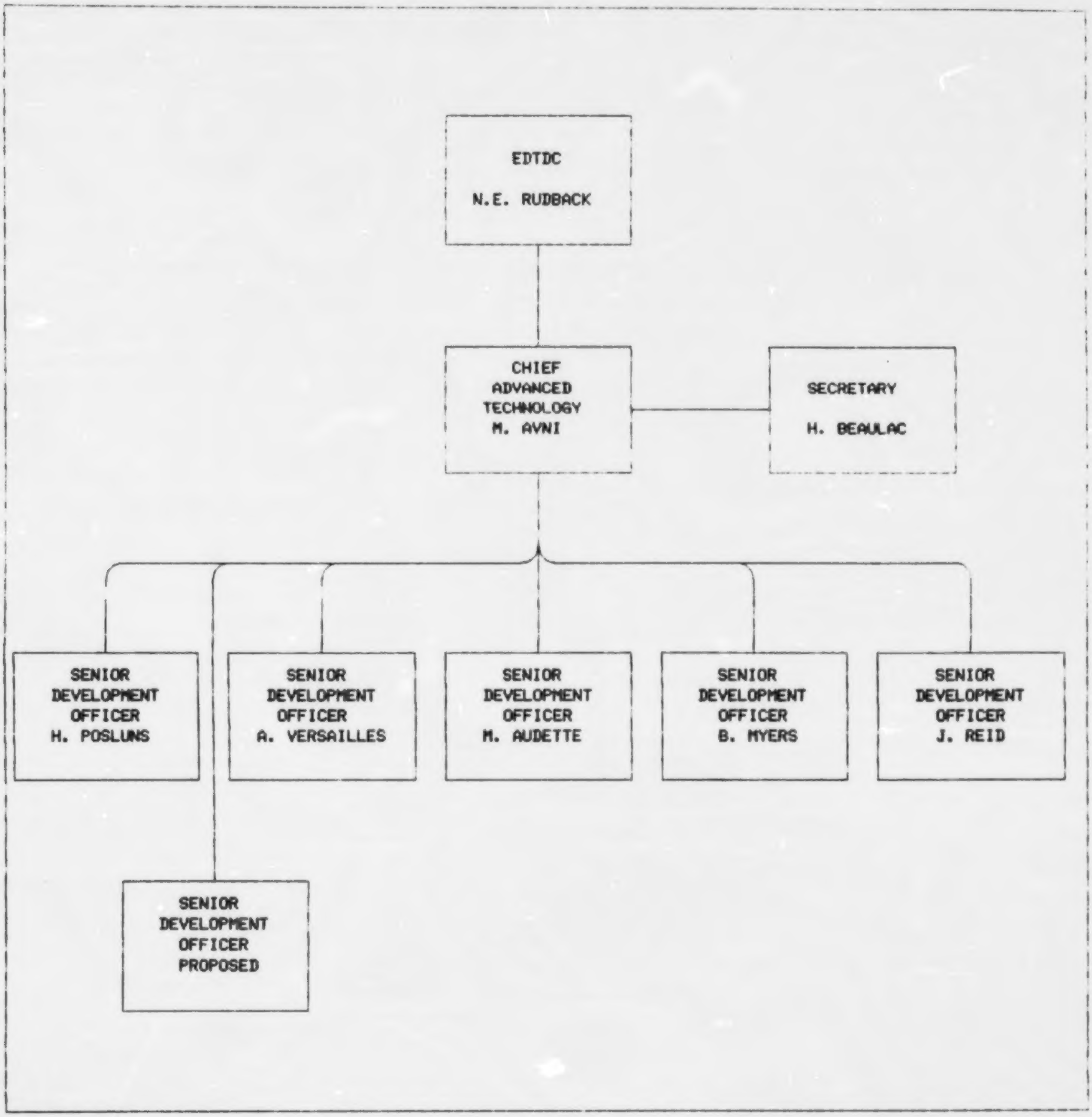

EDTDC
N.E. RUDBACK
CHIEF
ADVANCED
TECHNOLOGY
M. AVNI
SECRETARY
H. BEAULAC
SENIOR
DEVELOPMENT
OFFICER
H. POSLUNS
SENIOR
DEVELOPMENT
OFFICER
A. VERSAILLES
SENIOR
DEVELOPMENT
OFFICER
M. AUDETTE
SENIOR
DEVELOPMENT
OFFICER
B. MYERS
SENIOR
DEVELOPMENT
OFFICER
J. REID
SENIOR
DEVELOPMENT
OFFICER
PROPOSED

FIGURE 4: TDC ORGANIZATION CHART

ADVANCED TECHNOLOGY

- one Senior Development Officer seconded to the Research, Analysis and Special Programs Section;
- one Senior Development Officer position currently vacant; and
- one Secretary to the Chief and the Research and Development Officers.

The major responsibilities of the Secretary include:

- typing services and assistance with preparation of project and contractual documents, reports, forms and other correspondence using a typewriter or word processor;
- proof-reading and editing Division's material for accuracy in spelling, grammar, punctuation and language usage involving highly scientific, technical, legal and other specialized subject matter;
- secretarial duties related to incoming and outgoing mail, telephone, visitors and appointments, and travel arrangements and reservations;
- file and record keeping functions related to Division's activities, including contractual documents and related correspondence, and reference materials related to the current concerns of the Division;
- administrative assistance to the Chief and Senior Research and Development Officers including completing of various forms related to contracts, and checking the materials provided by the Project Officers for accuracy and completeness based on applicable standards and procedures;
- locating, extracting and compiling specific information from project files, library documentation, financial and contractual documents, and the Management Information Systems using pre-programmed menu driven functions.

1.3.3.3 Transportation Systems Technology Division

(Please refer to the Organization Chart in Figure 5.)

Responsible for defining, implementing, managing and performing (on a project basis) research and development activities that develop major new transportation systems technology.

The Transportation Systems Technology Division is also responsible for operational planning and coordination of TDC's Marine Modal Program, Energy Subprograms, and man/machine interface.

Reporting to the Chief of Transportation Systems Technology are presently:

- five Senior Development Officers whose responsibilities include identifying, defining, implementing, managing and performing (on a project basis) R&D Projects within the Division's mandate;
- two new Senior Development Officer positions created for the FY 88/89, which are not yet filled;
- one new Development Officer position created for FY 88/89, which is not yet filled; and
- one secretary to the Chief and Senior Research and Development Officers whose major responsibilities are outlined in Paragraph 1.3.3.2 above.

1.3.3.4 Current Technology Division

(Please refer to the Organization Chart in Figure 6.)

Responsible for defining, implementing, managing and performing (on a project basis), research and development activities addressing improvements and modifications to transportation systems and technology currently in operation.

The Current Technology Division is also responsible for operational planning and coordination of TDC's Rail Modal R&D Program.

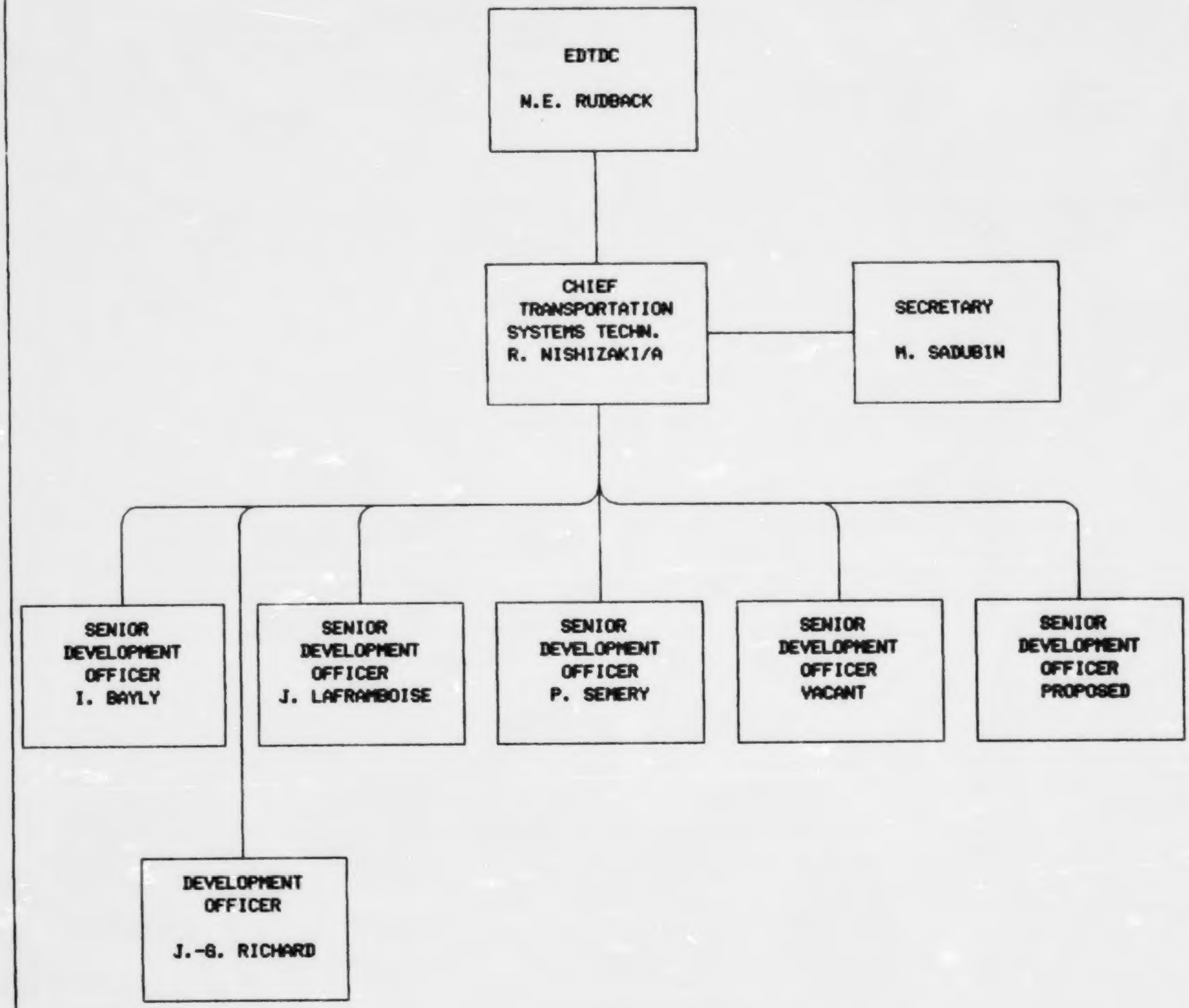
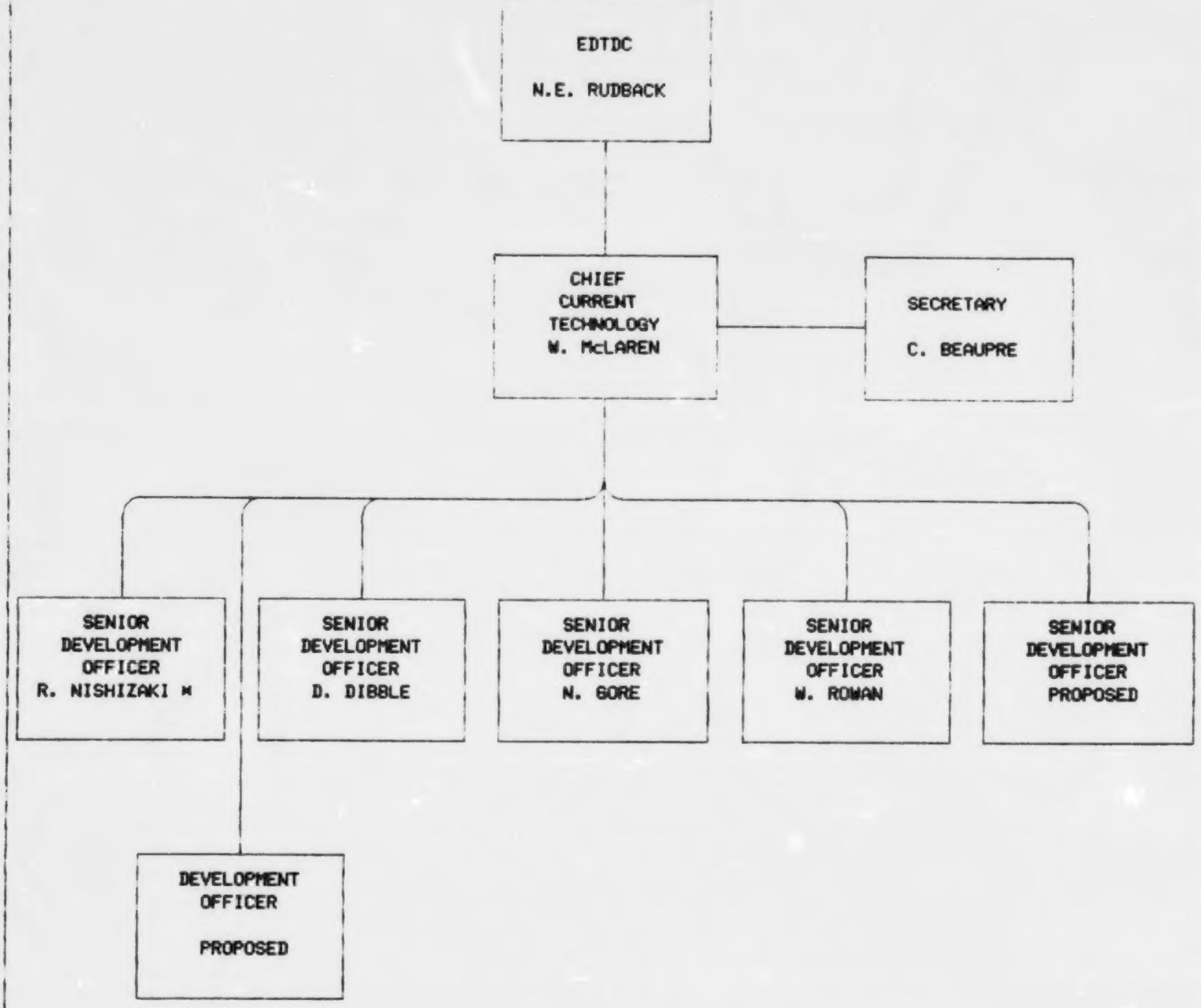

EDTDC
N.E. RUDBACK
CHIEF TRANSPORTATION SYSTEMS TECHN.
R. NISHIZAKI/A
SECRETARY
M. SADUBIN
SENIOR DEVELOPMENT OFFICER
I. BAYLY
SENIOR DEVELOPMENT OFFICER
J. LAFRAMBOISE
SENIOR DEVELOPMENT OFFICER
P. SEMERY
SENIOR DEVELOPMENT OFFICER
VACANT
SENIOR DEVELOPMENT OFFICER
PROPOSED
DEVELOPMENT OFFICER
J.-G. RICHARD

FIGURE 5: TDC ORGANIZATION CHART

TRANSPORTATION SYSTEMS TECHNOLOGY


EDTDC
N.E. RUDBACK
CHIEF CURRENT TECHNOLOGY
W. McLAREN
SECRETARY
C. BEAUPRE
SENIOR DEVELOPMENT OFFICER
R. NISHIZAKI *
SENIOR DEVELOPMENT OFFICER
D. DIBBLE
SENIOR DEVELOPMENT OFFICER
N. GORE
SENIOR DEVELOPMENT OFFICER
W. ROWAN
SENIOR DEVELOPMENT OFFICER
PROPOSED
DEVELOPMENT OFFICER
PROPOSED

* ACTING AS CHIEF OF TRANSPORTATION SYSTEMS TECHNOLOGY DIV.

FIGURE 6: TDC ORGANIZATION CHART

CURRENT TECHNOLOGY

Reporting to the Chief of Transportation Systems Technology are presently:

- three Senior Development Officers whose responsibilities include identifying, defining, implementing, managing and performing (on a project basis) R&D Projects within the Division's mandate;

- one Senior Development Officer position proposed for FY 88/89, but not yet filled;

- one Development Officer position proposed for FY 88/89, but not yet filled; and

- one Secretary to the Chief and Senior Research and Development Officers whose major responsibilities are outlined in Paragraph 1.3.3.2 above.

1.3.3.5 Technology Applications Division

(Please refer to the Organization Chart in Figure 7.)

Responsible for defining, implementing, managing and performing (on a project basis), research and development activities that assess generic transportation issues such as multi-modal safety.

As well, the Technology Applications Division is responsible for operational planning and coordination of TDC's Bus and Truck Modal Programs, and for planning and management of full scale system demonstrations and field trials of new technologies.

Reporting to the Chief of Technology Applications are presently:

- three Senior Development Officers whose responsibilities include identifying, defining, implementing, managing and performing (on a project basis) R&D Projects within the Division's mandate;

- one Senior Development Engineer responsible for in-house research and development activities;

- one new Senior Development Officer position proposed for FY 88/89, but not yet filled;

- one Development Officer position presently vacant; and

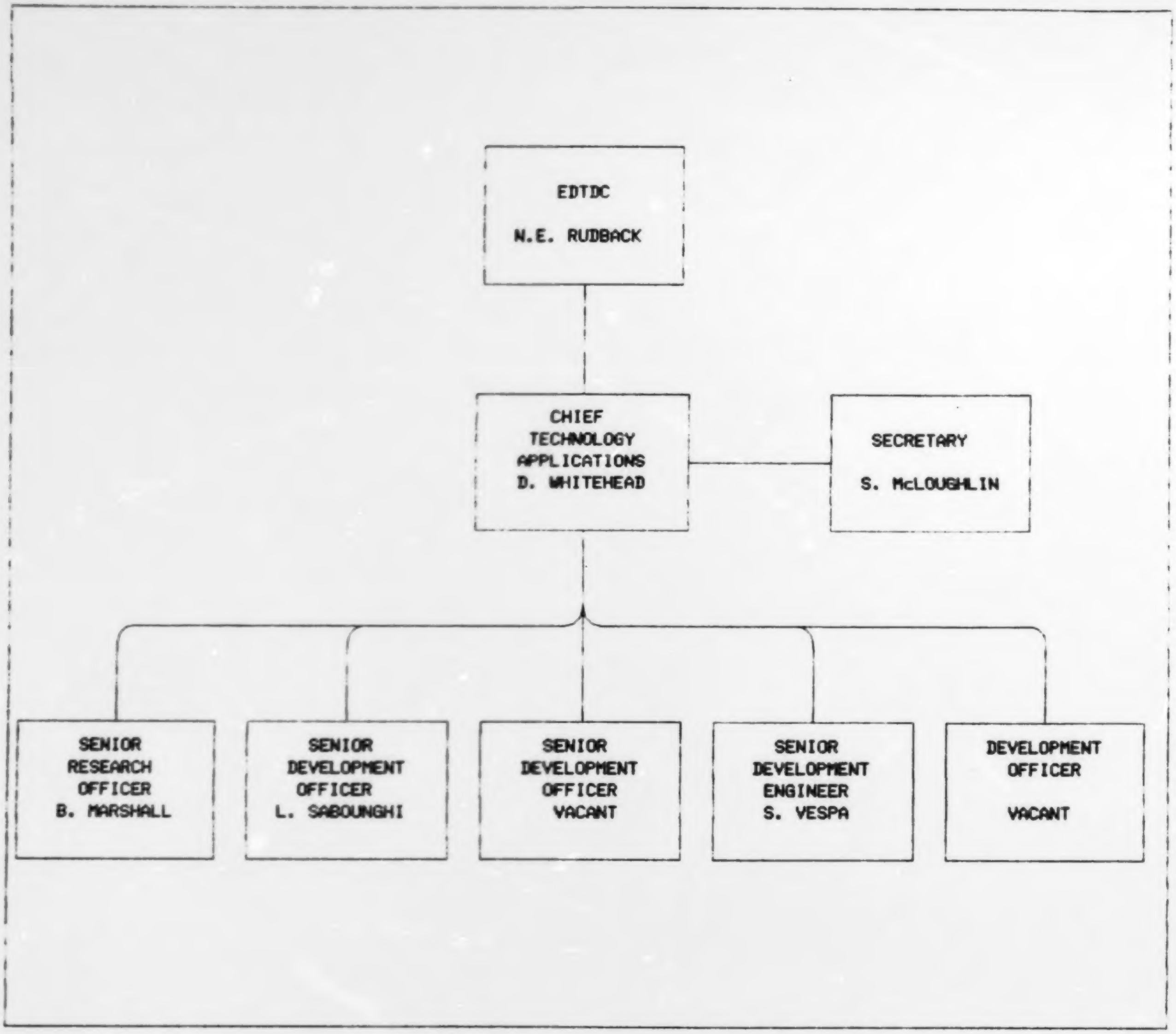

EDTDC
N.E. RUDBACK
CHIEF TECHNOLOGY APPLICATIONS
D. WHITEHEAD
SECRETARY
S. McLOUGHLIN
SENIOR RESEARCH OFFICER
B. MARSHALL
SENIOR DEVELOPMENT OFFICER
L. SABOUNGHI
SENIOR DEVELOPMENT OFFICER
VACANT
SENIOR DEVELOPMENT ENGINEER
S. VESPA
DEVELOPMENT OFFICER
VACANT

FIGURE 7: TDC ORGANIZATION CHART

TECHNOLOGY APPLICATIONS

- one Secretary to the Chief and Senior Research and Development Officers whose major responsibilities are outlined in Paragraph 1.3.3.2 above.

1.3.3.6 Research, Analysis and Special Programs Division

(Please refer to the Organization Chart in Figure 8).

The Chief of the Research, Analysis and Special Programs Division is responsible for:

- preparation of TDC's Annual Operational Plan;

- research analysis, monitoring, evaluation and planning, and information transfer;

- management of implementation of Special Programs which are of a high priority, but fall outside of the responsibilities of other Technology Divisions;

- operational planning and coordination of the TDC Elderly and Disabled, Urban Transportation, and Research Support Programs;

- liaison with the Department of Supply and Services (DSS), including Unsolicited Proposals (UP) and Funding Proposals; and

- directing the operations of TDC's Administration Support Services, Research Library and Management Information Systems.

Reporting to the Chief of the Research, Analysis and Special Programs Division are presently:

- a Senior Research Officer;

- a Program Officer for Special Needs;

- Manager of Administrative Services;

- Head of Research Library;

- a Senior Systems Analyst (Computer Systems), presently vacant; and

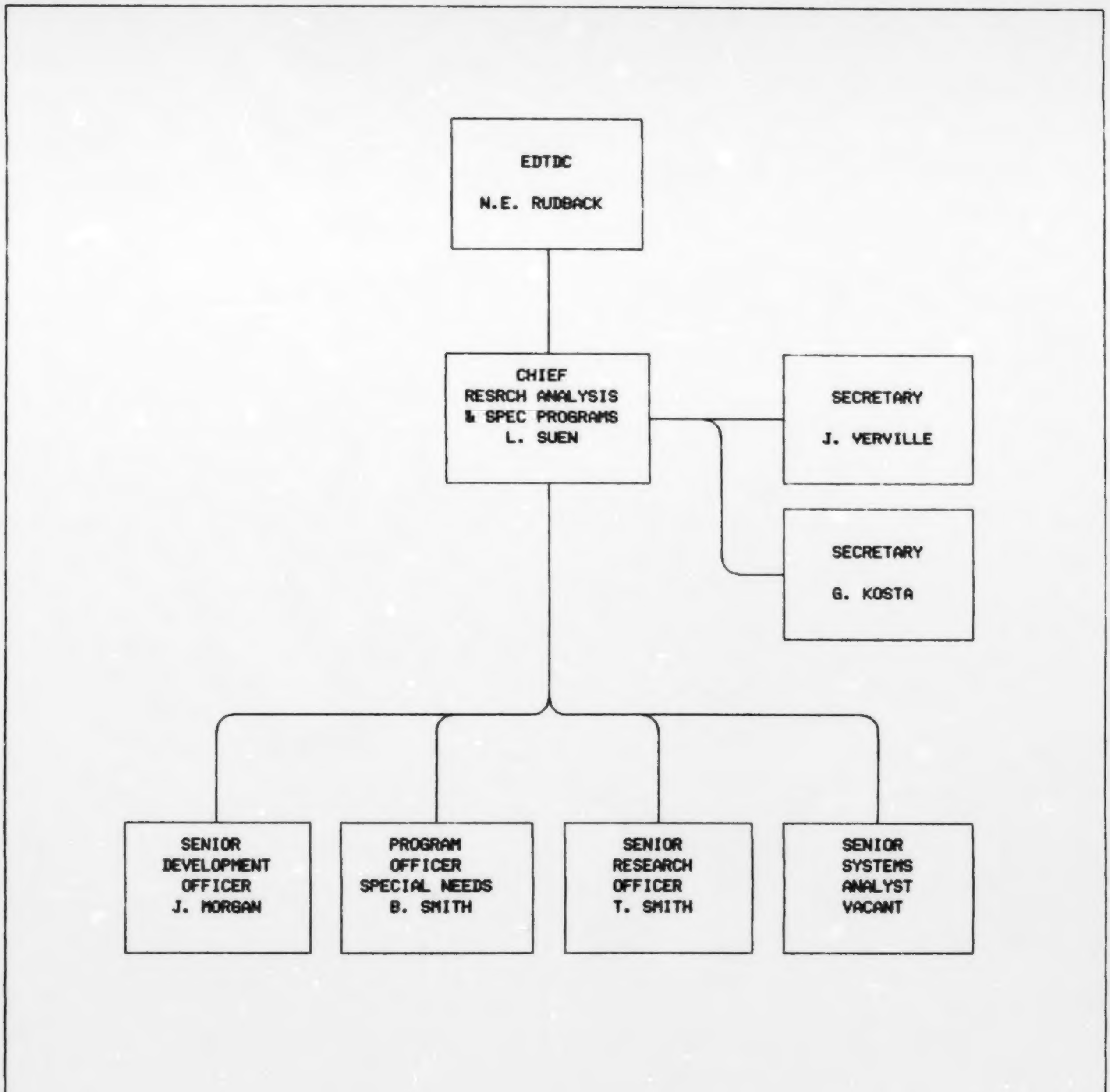

EDTDC
N.E. RUDBACK
CHIEF
RESRCH ANALYSIS
& SPEC PROGRAMS
L. SUEN
SECRETARY
J. VERVILLE
SECRETARY
G. KOSTA
SENIOR
DEVELOPMENT
OFFICER
J. MORGAN
PROGRAM
OFFICER
SPECIAL NEEDS
B. SMITH
SENIOR
RESEARCH
OFFICER
T. SMITH
SENIOR
SYSTEMS
ANALYST
VACANT

FIGURE 8: TDC ORGANIZATION CHART

RESEARCH ANALYSIS & SPECIAL PROGRAMS

- one Secretary to the Chief and Senior Research and Development Officers whose major responsibilities, in addition to those outlined in Paragraph 1.3.3.2, include filing and update of financial, administrative, personnel and policy manuals, directives, procedures and reports of current concern to the Branch.

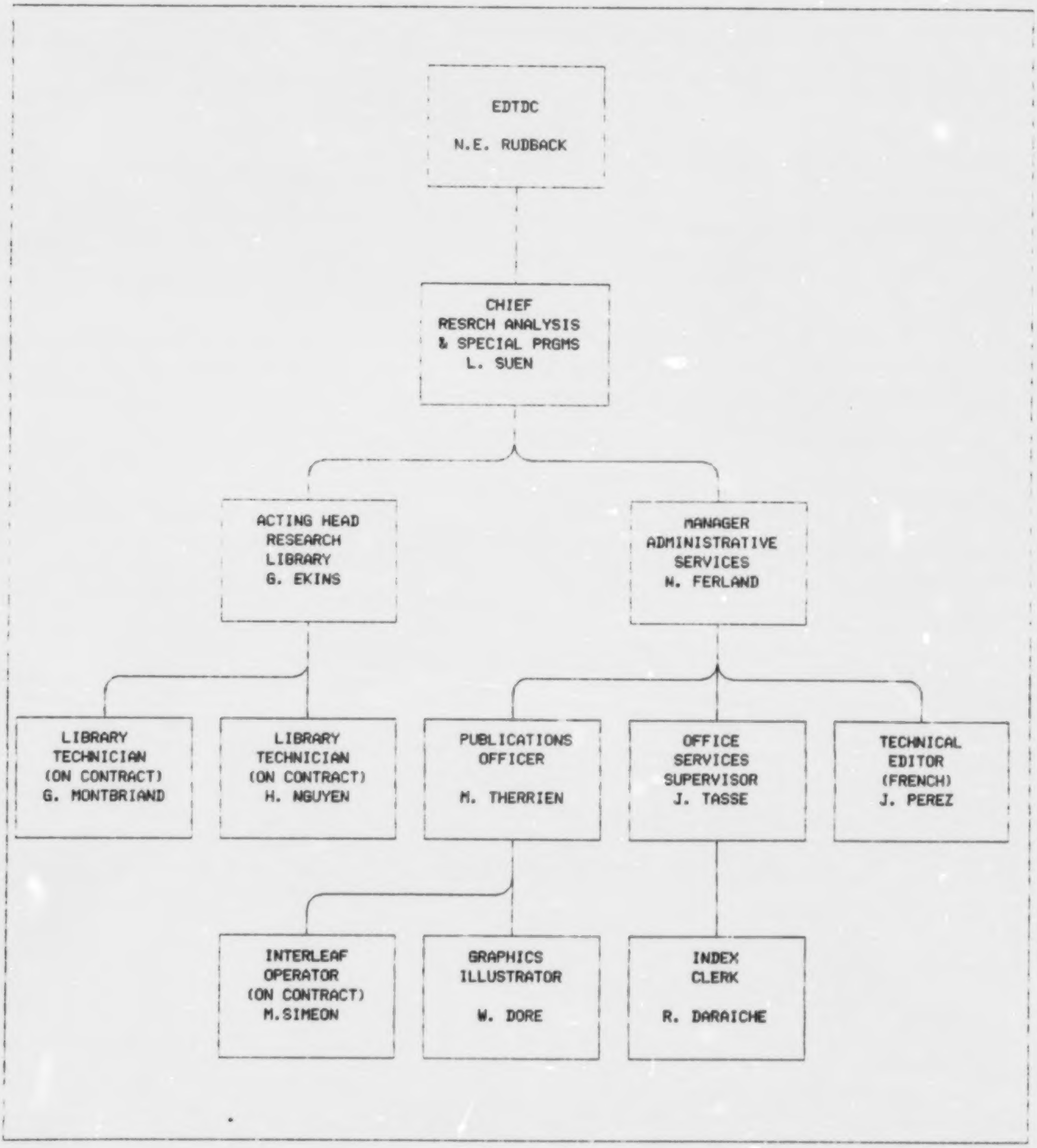
1.3.3.6.1 Manager, Administrative Services

(Please refer to the Organization Chart in Figure 9).

Under the general supervision of the Chief, Research Analysis and Special Programs, plans, organizes, develops, manages, directs, evaluates and performs budgetary control for programs and activities of the Administrative Services Division of TDC.

The major responsibility include:

- implements a program of providing administrative support facilities to TDC and other units of Transport Canada components lodged within TDC accommodation;
- organizes, manages, and directs the technical publication services program to meet the information services needs of TDC;
- organizes, manages and directs the development and implementation of the TDC R&D Report Depository Centre;
- manages the Personnel support activities and TDC's adherence to Official Languages Policy;
- acts as Emergency and Security Officer for TDC and the region;
- manages the Public Relations requirements of TDC;
- plans, organizes and implements awareness promotion programs for TDC activities;
- participates in TDC and DGRD Management Committee meetings and provides counsel on administrative implications of new or changed policies;
- plans, organizes and implements rationalization procedures for TDC administrative Services in line with evolving policies and needs;



EDTDC
N.E. RUDBACK
CHIEF
RESRCH ANALYSIS
& SPECIAL PRGMS
L. SUEN
ACTING HEAD
RESEARCH
LIBRARY
G. EKINS
MANAGER
ADMINISTRATIVE
SERVICES
N. FERLAND
LIBRARY
TECHNICIAN
(ON CONTRACT)
G. MONTBRIAND
LIBRARY
TECHNICIAN
(ON CONTRACT)
H. NGUYEN
PUBLICATIONS
OFFICER
M. THERRIEN
OFFICE
SERVICES
SUPERVISOR
J. TASSE
TECHNICAL
EDITOR
(FRENCH)
J. PEREZ
INTERLEAF
OPERATOR
(ON CONTRACT)
M.SIMEON
GRAPHICS
ILLUSTRATOR
W. DORE
INDEX
CLERK
R. DARAICHE

FIGURE 9: TDC ORGANIZATION CHART

ADMINISTRATIVE & SUPPORT SERVICES

- organizes and implements special assignments;
- supervises staff, and performs other related duties.

1.3.3.6.1.1 Office Services Supervisor

Under the direction of the Manager, Administrative Services, Supervises the work of a Regional Subsection covering the Central Registry, Mailroom, Communications and Photocopying Services, and TDC's R&D reports inventory functions. Major responsibilities include:

- supervision of the work of two permanent TDC employees, and up to two part-time employees, as required;
- maintains a File Classification System by area of specialization, and controls the operation of the Filing Service;
- directs and controls the operations of the Mailroom, messaging and expedition;
- ensures that all TDC staff are provided with the communication services, including Telex, Facsimile, audio-visual materials and photocopying services;
- directs the tasks related to the R&D Reports inventory as per TDC's Publications Standards Manual for use by Contractors; and
- provides information services to the public, other Ministries, and outside organizations.

Administrative and Purchasing Clerk

Under the general supervision of the Manager of Administrative Services, performs the duties related to Personnel and Administration, including:

- provides typing of reports, correspondence, and filing services;
- operates the Person-Month Utilization (PMU) computerized application system;
- generates Requisitions for the purchase of stationary, general supplies, furniture and equipment, printing materials, audio-visual equipment;

- installation, maintenance and repair services of TDC's office equipment;

- ensures control of the Receiving Function via signed Packing Slips from the Mail room and Registry Office, and performs pre-audit of invoices for merchandise received and services rendered;

- maintains cost and inventory records related to procurement activities; and

- maintains the records of plant and equipment, including the marking, location, maintenance and up-keep.

Index Clerk

Under the General Supervision of the Office Services Supervisor, classifies, indexes, and cross-references the administrative correspondence and a large proportion of the technical and scientific material and documents received by TDC. Major activities include:

- systematically reviews the contents of files and file series to determine the need for correction expansion or amalgamation;

- maintains the index cards, keeping an accurate record of publications by numerical sequence, subject classification groups, the primary subject heading numbers within each group, the sub-subject numbers and file titles created under each primary subject heading number;

- maintains the status, and produces monthly reports related to the draft and final reports received using the computerized MIS Project Completion Phase Subsystem;

- answers telephone inquiries from TDC staff and public related to TDC published documents and materials; and

- controls the circulation of files and loose record material to and from the various Offices within and outside TDC.

General Clerk

Under the supervision of the Supervisor, Administrative Services, performs control of TDC Publications, including the following activities:

- obtaining assigned Publication Control Numbers (TP) from Ottawa;
- receiving and inventory control of Publications using the computerized MIS Service de Gestion des Publications (SGP) Subsystem;
- maintains and produces computerized Publication Distribution List;
- distributes samples of Publications to the TDC Library, the Ministry's Library in Ottawa, other Libraries, and the public at large on demand;
- responds to internal and external requests for Publications by telephone and by mail; and
- produces computerized distribution lists, form letters and mailing labels as required.

1.3.3.6.1.2 Publications Officer

Under the general supervision of the Manager of Administrative Services, plans, organizes, directs and controls the activities of TDC's Publications Section. Major responsibilities include:

- planning, organizing, directing and coordinating of TDC's publications, and other visual and audio-visual materials;
- planning, organizing, directing and coordinating of TDC's participation at various Expositions;
- planning, organizing, direction and control of TDC's computer assisted communication materials;
- evaluation, planning and control of the production of TDC's Publications and visual/audiovisual materials, using TDC's production facilities and outside resources; and

- research and inquiries related to TDC's needs in terms of publications and graphic materials in order to ensure the most economical means of meeting TDC's requirements.

Graphics Illustrator

Under the supervision of the Publications Officer is responsible for:

- drawing of schematic and isometric diagrams, maps, charts, graphs and technical illustrative materials for inclusion into TDC's project and study reports, abstracts and summaries, research papers, etc.;
- preparation of graphic display materials, e.g. posters, flip charts, slides and other visual display materials for use in conferences, displays, surveys, etc.;
- design of art work for use in book and report covers, and audio visual presentations; and
- advice and assistance to TDC Managers and Researchers on matters related to technical illustrations, graphic and other audio-visual display material.

Interleaf Operator

On contract to TDC in the Publications Section, reports to the Publications Officer, and is responsible for:

- text and graphics data entry, editing and processing using the Interleaf Publishing system and related software.

1.3.3.6.1.3 Technical Editor (French)

Under the general direction of the Manager, Administrative Services, provides French editing/revision services of technical and general nature to Research and Development Officers, other TDC staff, and other Regional Centres of the Ministry of Transport. Major activities include:

- quality control of all internal and contracted French-language documents, to ensure that they conform to TDC's policies and standards;

- performs an analysis of each document received;
- directs the work of outside French-language editors contracted by TDC, and students (stagiaires).

1.3.3.6.2 Head Research Librarian

Under the general supervision of the Chief, Research Analysis and Special Programs Division, and through the functional advice of the Chief, Departmental Library and Information Services, plans and organizes the TDC Library Services to provide effective information support for TDC's specialized staff, other components of Transport Canada as required, and the transportation research community in general. Major responsibilities include:

- planning and organization of TDC Library's collection, services, and systems to provide effective information support for transportation research specialists;
- administration and supervision of library operations by selecting, managing, training, and supervising a staff consisting of professional and non-professional personnel;
- directs and provides comprehensive Library Information Services by monitoring current transportation developments, selecting, acquiring and disseminating information relevant to TDC's research requirements, reviewing and approving recommendations for acquisitions;
- provides both manual and on-line computerized literature searches;
- coordinates the effectiveness of the Library Services with related TDC's activities, and cooperates with other libraries, information agencies and industry associations to promote efficient access to transportation information;
- plans and manages projects related to transportation technology transfer, and dissemination of information consistent with TDC's goals.

Library Technicians

On contract to TDC in the Research Library, perform the following activities:

- acquisitions of documents and periodicals;
- cataloguing and classification of documents;
- control of periodical issues (Cardex check-in, claiming and routing to TDC staff); and
- maintenance and production of TDC document distribution lists.

1.3.3.7 TDC Financial Services

(Please refer to the Organization Chart in Figure 10.)

Manager, Financial Services

Under the general direction of the TDC Executive Director, and functional direction of the Director of the Budget and Financial Services, Headquarters Administration, manages the TDC Financial Services Group. Major responsibilities include:

- supervision of the Regional Accounting Unit consisting of three clerical employees engaged in maintaining detailed records of financial commitments, expenditures and revenue, and processing of Progress Claims for payment;
- administers the operation of TDC Allotment and Cash Control Systems;
- oversees the Centre's computerized Contract Commitment System and provides senior management with information regarding unencumbered free balances;
- recommends and implements modifications to the existing Accounting Systems and Procedures in order to improve internal control and accounting services to management;
- directs and controls TDC's Accounts Receivable from complex Shared-cost Agreements with the Government (Federal and Provincial), private industry,and universities;

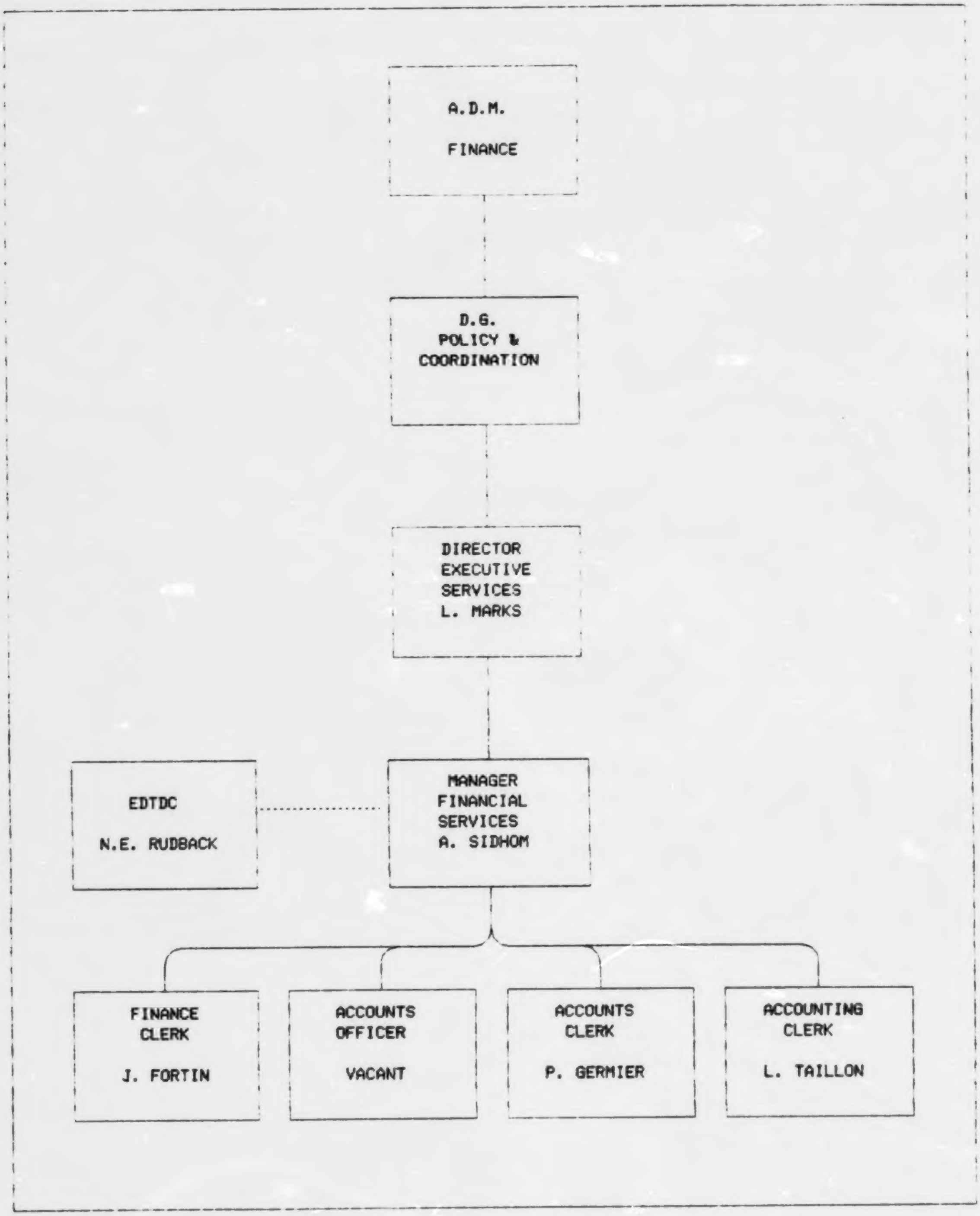

A.D.M.
FINANCE
D.G.
POLICY &
COORDINATION
DIRECTOR
EXECUTIVE
SERVICES
L. MARKS
EDTDC
N.E. RUDBACK
MANAGER
FINANCIAL
SERVICES
A. SIDHOM
FINANCE
CLERK
J. FORTIN
ACCOUNTS
OFFICER
VACANT
ACCOUNTS
CLERK
P. GERMIER
ACCOUNTING
CLERK
L. TAILLON

FIGURE 10: TDC ORGANIZATION CHART

FINANCIAL SERVICES

- directs and controls the maintenance of accounting records, and preparation of Financial Statements;

- discharges other related responsibilities, such as providing information to satisfy various Ministerial requests for financial information.

Accounts Clerk

Under the supervision of the Manager of Financial Services, the Accounts Clerk is responsible for:

- accounting operations and control of funds related to 300 Contracts under seven Responsibility Centres, including R&D Contracts administered and budgeted by TDC, Contracts funded by two or more Federal Ministries, and Contracts funded by Funding Agreements, between TDC, private sector, and external educational and research institutions;

- entry of accounting data related to the R&D and Funding Contracts into the computerized Management Information System (MIS);

- maintaining an alphabetical filing system of Contract Documents, Amendments to Contracts, and related transaction documents, including invoices and payments, receipts and credits, and applicable correspondence; and

- ensuring signatures on the appropriate Contract and transaction documents, performing information searches related to unpaid claims, and preparing other financial information.

Finance Clerk

Under the supervision of the Manager Financial Services:

- processes and keeps track of TDC contract requisitions and related documentation as it goes between TDC and DSS;

- issues travel advances, reimbursements and recuperations;

- assigns financial codes to requisitions, and other documents and memoranda;

- prepares all TDC Finance business correspondence.

Accounting Clerk

Under the supervision of the Manager Financial Services:

- maintains the TDC General Ledger double entry accounting system, controlling expenditures for all seven TDC responsibility centres;
- pre-audits travel advance claims and travel expenses;
- initials requests for financial disbursements, and;
- prepares reports on TDC expenditures and projected costs.

1.4 PARTICIPANTS IN STUDY

In the course of this Study, we have interviewed the following TC and TDC managers and system users:

1.4.1 Transport Canada Research and Development

Mr. R.R. Mayes, Director General, Research and Development (DGRD).

1.4.2 Transport Canada Policy and Coordination

Mr. M.G. Baker, Director, Air Statistics and Forecasts, Economic Analysis;

Mr. G.S. Mindel, Senior Scientific Advisor, Research and Development.

1.4.3 Transport Canada Communications and Informatics Branch

- Mr. M.E. Plouffe, Director General, Communications and Informatics;
- Mr. J. Sauve, Director, Office Automation and Services;
- Mr. M. McIndoe, Director, Informatics Facilities;
- Mrs. R. Harris, Director, Informatics Applications;
- Mr. S. Benedetti, Director, Informatics Policy and Planning;
- Mr. G.R. Verner, Director, Informatics Resource Management;
- Mr. G. Mullin, Chief, Material Policy and Coordination Applications.

1.4.4 Transportation Development Centre

Mr. N.E. Rudback, Executive Director, Transportation Development Centre.

1.4.4.1 TDC Division Chiefs

- Mr. M. Avni, Chief of Advanced Technology;
- Mr. R.S. Nishizaki, Acting Chief of Transportation Systems Technology, and Modal Coordinator, Marine;
- Mr. W.S.C. McLaren, Chief of Current Technology, and Modal Coordinator, Rail Freight;
- Mr. D. Whitehead, Chief of Technology Applications, and Modal Coordinator, Inter/Multi Modal;
- Ms. L. Suen, Chief, Research, Analysis and Special Projects; Modal Coordinator, Urban, Elderly and Disabled; Coordinator of R&D Support Programs, and Coordinator of TDC Information Systems Services.

1.4.4.2 TDC Project Officers

- Mr. B.B. Myers, Senior Development Officer, and Modal Coordinator, Air;
- Mr. M. Audette, Senior Development Officer, and Modal Coordinator, Track Levitated Vehicles;
- Mr. L. Sabounghi, Senior Development Officer, and Modal Coordinator, Highway;
- Mr. B. Marshall, Senior Research Officer, and Modal Coordinator, Rail Passenger;
- Mr. J. Laframboise, Senior Development Officer, and Modal Coordinator, Off-road;
- Mr. W. Rowan, Senior Development Officer, and Modal Coordinator, Slurry Pipelines;
- Mr. D. Dibble, Senior Development Officer;
- Mr. H. Posluns, Senior Development Officer, Project Manager, TDC Computer Systems Evaluation and Requirements Study.

1.4.4.3 TDC Financial Services

- Mr. A. Sidhom, Manager, Financial Services;
- Mrs. P. Germier, Accounting Clerk;
- Mrs. L. Taillon, Accounting Clerk;
- Mrs. J. Fortin, Finance Clerk.

1.4.4.4 TDC Administrative Support Services

- Mrs. N. Ferland, Manager, Administrative and Support Services;
- Mr. M. Therrien, Publications Officer;
- Mrs. S. Daveluy, Office Services Supervisor.

1.4.4.5 TDC Research Library

- Mr. G. Ekins, Acting Head of Research Library;
- Ms. G. Montbriand, Library Technician, on contract from Communications Gillies Inc.

1.4.4.6 Systèmes sur Mesure P.B. Inc. (SSM)

We have interviewed the following SSM Contractor's staff, who are contracted for development, support and facility management of TDC's Informatics Facilities and Systems:

- Mr. P. Boulay, President of SSM P.B. Inc.;
- Mr. A. Napoli, Analyst, MIS Users' Interface;
- Mr. D. Kostitch, Analyst/Programmer;
- Ms. M. Gravel, Programmer and Operator.

2. ENVIRONMENT

The Transportation Development Centre (TDC) is Transport Canada's centralized Research and Development organization. TDC formulates, initiates, manages, and reports on an R&D program that comprises an average of 300 active projects per year. These projects are contracted to a variety of performing organizations, mostly in the private sector, and concern all transportation modes, systems and technologies. TDC serves as the Department's centre of expertise on transportation innovation and technology.

TDC's activities form a key part of the R&D function assigned to the Department's Research and Development Directorate, which in turn forms part of the responsibilities assigned to the Policy and Coordination Group.

Responsible to the Director General, Research and Development, TDC conducts its R&D program in accordance with departmental directives and guidelines on transportation R&D. These directives address R&D priorities and requirements in support of departmental activities, and in support of the Canadian transportation industry where justified under the existing government policies.

Implicit in these responsibilities is the need to maintain close working relations with the transportation technology community, to allow for the most efficient use of R&D resources.

2.1 EXISTING SITUATION

2.1.1 TDC Information Systems Background

The following narrative provides a brief summary of the evolution of TDC's information systems and facilities over the period of the last fifteen years, based on our understanding gained from the interviews of the TDC staff, and our review of the TDC contract files related to the SSM P.B. Inc. contracts for the last ten years.

The initial use of data processing facilities and services at TDC arose from the requirements for electronic processing of data acquired in the conduct of TDC research and development activities. These requirements were met via the computing facilities and services provided by McGill University, IST (L'Industriel Services Techniques), and STI (Services Techniques Informatiques) service bureaus.

At the outset of its information systems development (circa 1973), TDC had no in-house information systems staff. The programming services and technical assistance required for the processing of the research data were provided by the service bureaus, or by outside contractors and students contracted for specific data processing tasks. The project management was provided by TDC Senior Development Officers.

When the need for automated Financial Accounting and Project Management Systems arose, a Senior Development Officer was charged to analyze TDC's management information systems requirements. The contractor, who was attending to TDC's scientific data processing needs at the time, was also contracted to implement the initial MIS on the IST Service Bureau's time sharing system. The initial system consisted of approximately 15 data fields serving the minimal needs of TDC's Financial Services and Project Officers.

The evolution of in-house data processing facilities started circa 1978, when the need arose for word processing equipment for preparation of numerous documents and correspondence related to definition, justification, approval, funding, and contracting of R&D Projects. The contractor who implemented the initial MIS application was also contracted to provide hardware selection advice, and programming and implementation services.

The hardware selection process resulted in procurement of a Digital Equipment's LSI PDP 11/23 microcomputer via a Digital Equipment's OEM (Original Equipment Manufacturer), who provided an integrated turn-key system for word processing, based on a third party provided RTX 11 multi-user operating system.
In order to reduce the programming time and expense, the SSM contractor proposed to use the skeleton data base and 4 GL tools developed in the course of his postgraduate studies, which required conversion to the PDP 11/23 environment, and additional development effort to meet the stated purpose.

Due to the inherent advantages of the 4 GL tools in terms of application systems development time, ease of maintenance, and ad-hoc reporting capability, the required conversion and development effort of the 4 GL tools were supported by TDC. This enabled TDC to implement the initial MIS application within a reasonable period of time, and modify and enhance it functionally as additional requirements evolved.

Upon completion of the initial MIS application development, SSM was awarded several other contracts related to the data processing requirements of TDC's on-going research projects, functional and performance improvements of the CIS/PROCOL 4 GL language, functional enhancements of the MIS application, and development and implementation of the Library Acquisition System (LAS), Mailing List System (MLS), General Ledger (G/L) system, and Person-Month Utilization (PMU) system.

As the number of users and applications grew, the PDP 11/23 system was expanded in terms of memory, user terminals and disk space, but eventually it could not provide a reasonable level of performance under the growing application load, and the increasing sophistication and overhead of the 4 GL tools.

It became apparent that the system hardware and operating system would have to be upgraded to a multi-user minicomputer. The SSM contractor was contracted anew to provide hardware selection advice and implementation services. After some deliberation between the Digital's relatively new VAX family of 32 bit processors and the aging 16 bit PDP 11 processors, the PDP 11/44 processor running the RSX 11M Operating System was selected, in order to simplify the conversion of the 4 GL tools, and meet the target implementation dates.

The PDP 11/44 hardware was installed in the 1983 calendar year, but the 4 GL and MIS application programs conversion required considerably more time and effort than planned, and the new system came on-line more than a year later.

Due to a number of factors, including the inherent 64 Kbytes memory addressing limitation of the unmapped RSX 11M operating system and the 16 bit hardware architecture, the third party non-reentrant C Compiler in which the CIS/PROCOL tools were recorded, the inherently much greater overhead of the quasi-relational data base and 4 GL environment, and the single disk drive hardware configuration, the processor upgrade to PDP 11/44 resulted in much smaller performance improvement over the PDP 11/23 micro-computer than anticipated.

In accordance with TDC's contracting out policy, SSM was also contracted to provide the facility management, application maintenance and user support services from the inception of the TDC in-house computer systems. All these contracts were awarded on a single source contracting basis, justified on the basis of SSM's unique expertise in the area of the 4 GL tools, and knowledge of TDC's requirements and application systems. As the number and dollar volume of SSM's contracts grew, the DSS Contract Administrators from the Montreal DSS Office questioned the single source contracting procedures, but eventually accepted them.

All contracts related to computer systems services were managed on a part time basis by the TDC Senior Development Officers, Manager of Financial Services, and presently Chief of the Research Analysis and Special Programs. The Transport Canada's Systems Development Life Cycle (SDLC) procedures and other relevant standards were not applied.

The single source contracting procedures and insufficiently detailed time and project reporting procedures resulted in frequent project delays and budgetary overruns which took the form of renewing the existing contracts before the planned expiry date when the budgets were spent.

The deteriorating performance of the MIS application on the PDP 11/44 processor was largely attributed by the contractor to the 64 Kbytes memory addressing limitation of the 16 bit PDP 11/44 hardware and RSM 11M operating system architecture. The increased memory addressability of the RSX 11M-PLUS Mapped Operating System of 128 Kbytes for user processes, and 192 Kbytes for system processes was not exploited.

The migration of the General Ledger application to the PC DOS PROCOL environment considerably reduced the system load, but it failed to provide the long term relief, while adversely affecting the integration of related accounting applications.

The poor performance of the MIS application and inadequate systems development standards eventually affected the further evolution of the MIS application, particularly the functions related to Project Officer's requirements for planning, monitoring and analysis of R&D Projects.

For detailed status of the existing information systems and facilities, please, refer to Sections 2.2, Description of the Existing Systems, and 2.3, Problems, below.

2.1.2 TDC Objectives

TDC objectives, in support of Transport Canada's R&D objectives and programs, are:

1. to ensure timely technological innovation through development and implementation of research and development strategies, plans, advice and R&D programs in support of departmental operational, regulatory, procurement and broader strategic objectives;
2. to contribute to the attainment of the related Federal objectives (e.g. energy, economic and regional development);
3. to promote and facilitate timely technological innovation in the Canadian transportation community which will contribute to improved safety, efficiency and effectiveness in the national transportation system; and
4. to provide leadership required to ensure that the transportation R&D activities are concerted and coordinated federally, and with the Provinces and industry.

Consistent with the Transport Canada's Transport Management Committee's approved funding policy aimed at sustaining a core of technological R&D in the Department, TDC's current R&D activities focus on:

a. Providing Transport Canada groups with the results of mission oriented R&D Projects in support of their operational, regulatory, policy planning and evaluation functions. Of particular importance is safety oriented air and rail R&D.

b. Undertaking R&D that addresses the requirements of the national transportation system generally, including the core R&D that is long-range and high-risk.

2.1.3 Organizational Structure

In support of its stated R&D operational plan, TDC is organized as follows:

The Director General Research and Development (DGRD) is responsible for the policy, planning, programming and evaluation of transportation research within the Federal Government.

Reporting to the Director General Research and Development is the Executive Director, Transportation Development Centre (EDTDC), responsible for the operational planning and management of TDC's activities which include a wide range of transportation research and development studies and projects in fulfillment of the needs of the Department, the Federal Government and the Canadian Transportation system.

Reporting to the Executive Director, TDC are five Technology Division Chiefs (Advanced Technology, Transportation Systems Technology, Current Technology, Technology Applications, and Research, Analysis and Special Programs) responsible for planning and managing TDC's R&D activities within their areas of technological expertise.

The Modal Coordinators, appointed from within TDC's Division Chiefs and Senior Development Officers, are responsible for planning and coordinating TDC's R&D activities by transportation mode; namely rail freight, rail passenger, marine, air, highway, off-road, slurry pipelines, tracked levitated vehicles, urban, elderly and handicapped, inter/multi modal, and R&D support.

Reporting to the Division Chiefs are:

- Senior Development Officers and Development Officers, responsible for identifying, defining, approving, negotiating, monitoring and managing specific R&D Projects and Programs in accordance with TDC's Annual Operational Plan, and the Project Procedures Manuals; and
- Senior Development Engineers and Development Engineers, responsible for carrying out specific R&D Studies and Projects at TDC;

The Chief of Research Analysis is also responsible for:

- Research and Development Support Services provided by the Senior Development Officer, Senior Research Officer, and Program Officer for Special Needs;
- Research Library Services provided by the Head of Research Library, and two Library Technicians;
- Administrative Support Services reporting to the Manager Administrative Services as follows:

  - Office Services Supervisor to whom report the Index Clerk and General Clerk;
  - Publications Officer to whom reports the Graphics Illustrator; and
  - Technical Editor (French);

- Coordination of Informatics Services provided by the SSM Contractor's personnel, including:
  - a Senior Specialist and author of the PROCOL 4 GL, who provides advice on the selection of systems hardware and software, applications architectures, and development techniques and standards;
  - an Analyst/Programmer who has worked extensively on the development of the PROCOL 4 GL tools, and development of the TDC's MIS and other application systems;
  - an End-User Coordinator, who is responsible for:
    - end-user training and support;
    - coordination of MIS end-user activities;
    - supervision of Facilities Management Services;
    - preliminary reviews and approval of end-user programming requirements; and
    - coordination of facilities management hardware and software maintenance activities.
  - a Programmer, who is responsible for:
    - support of the Financial Services end users;
    - execution of minor TDC programming requests;
    - routine operations tasks such as system backups and recoveries, analysis of system log files, recovery from routine system crashes, etc.

2.1.4 Decision Support Systems

On the basis of the organizational scope and importance, TDC's existing Decision Support Systems can be divided into the following categories:

1. Application systems which are of global scope to the TDC organization and serve more than one user area, such as the Management Information System (MIS), consisting of the Finance, Project Management, Management Reporting, Publications Management, and the recently completed Project Completion Phase Applications, running in the DEC PDP 11/44 multi-user environment.

2. Application systems which are of global scope to TDC, but are used by only one user area, including:

    a. The General Ledger System used by the TDC Financial Services for the financial accounting and budget control purposes, running in the IBM PC/3270 PC DOS single user environment;

    b. The Research Library's University of Toronto Library Automation System used by the TDC's Research Library user area in support of its own publications classification program, and in support of Project Officers' needs for research literature searches and abstracts borrowing programs, using the University of Toronto's UTLAS time sharing system via an IBM PC; and

    c. The Person-Month Utilization (PMU) System used by TDC Administrative Services for the Person-Month Utilization accounting, running in the PDP 11/44 multi-user environment.

3. Application systems which are limited in scope and use to a local user area, including:

    a. The Library Acquisition System (LAS) used by the Research Library staff for ordering of books and monographs, subscriptions for journals, and tracking of the status of orders and subscriptions; and

    b. The Research Library's Mailing List System used for dissemination of the Research Publications resulting from TDC's research and development projects.

4. Application packages used by TDC's Project Officers as supplemental tools to the limited services provided by the MIS System in R&D Project definition, justification, approval, negotiation and contract preparation phases, and for planning, monitoring and management of TDC Research and Development Projects. The Applications include:

   a. Word processing packages used in the stand-alone, single user IBM PC/XT/AT PC DOS, or IBM compatible MS DOS environments, including:

      - WordPerfect Corporation's WordPerfect, Version 4.2, U.K. English and French; and

      - Microsoft Corporation's Word, Version 3.1, English.

   b. Project management and graphics packages used in the stand-alone, single user IBM PC/XT/AT PC DOS, or IBM compatible MS DOS environments, including:

      - Breakthrough Software Corporation's TIME-LINE Project Management Version 2.0 and Graphics Add-on Packages.

   c. Electronic spreadsheet packages used in the stand-alone, single user IBM PC/XT/AT PC DOS, or IBM compatible MS DOS environments, including:

      - Lotus Development Corporations' Lotus 1-2-3, Release 1.A.

   d. Relational Database Management Systems (RDBMS) used in the stand-alone, single user IBM PC/XT/AT PC DOS, or IBM compatible MS DOS environments, including:

      - Relational Database Systems Inc. Informix Relational Database Management System Version 3.3 (Non-SQL version).

   e. Microcomputer based communication interfaces and software for RS232C asynchronous communications with other microcomputers or time sharing systems, running in the stand- alone, single user IBM PC/XT/AT PC DOS, or IBM compatible MS DOS environments, including:

- 1985 Hayes Microcomputer Products Inc. Smartcom II Software Package for use with Hayes Smartmodems 300, 1200, 1200B, and 2400 asynchronous MODEMs.

2.2 DESCRIPTION OF EXISTING SYSTEMS

The following narrative and diagrams provide a description of the existing TDC automated systems in terms of:

- present application system run-time environment;
- system functions, using context diagrams where appropriate;
- list and description of the main data entities, and references to the existing data base documentation in Appendix C, where available;
- system inputs, providing references to screen formats in Appendix B of this Report, where available;
- system outputs, providing references to sample reports in Appendix A of this Report, where available;
- interfaces with other systems, using description of interface functions, and system interface diagrams where applicable;
- data and processing volumes, based on the available and projected system statistics;
- summary of major problems.

As per the DCI request, we are providing a more detailed description of the MIS application, because of its global scope and strategic importance to TDC, and the present system bottlenecks preventing its full and effective use by all user areas.

2.2.1 System Functions

2.2.1.1 Management Information System (MIS)

MIS is TDC's major integrated management information system, addressing primarily the financial planning, management and control functions, and operational and management reporting functions related to TDC's R&D Project activities. The MIS also provides a minor project management capability which falls considerably short of the actual Project Officers' requirements.

The MIS and its various subsystems have been developed in a piecemeal manner over a period of fifteen years by the SSM contractor, starting with an embryonic system on a service bureau's time-sharing system, which was later converted to, and functionally expanded in the PDP 11/23 microcomputer and PROCOL 4 GL environment, and then again converted to, and functionally expanded in the present DEC PDP 11/44 and PROCOL environment.

Figure 2.1, the MIS Context Diagram, defines the context of the present MIS in terms of all major information flows ('data flows') within the system, and the sources and recipients of information ('terminators').

The following narrative outlines the major functions covered by the present MIS in the logical order of data flow through the system:

a. On-line maintenance of TDC's Annual Operational Plan information used for planning and reporting of TDC's R&D Programs and Projects.

b. On-line maintenance of the Proposed R&D Project information used in preparation of the Annual Operational Plan, and for identification and selection of specific R&D opportunities.

c. On-line maintenance of the Funding Contract information used by TDC Financial Services for:

  - administration of the Funding Contracts;
  - financial planning, management, and control of funds related to the R&D project expenditures;
  - validation of invoices from, and payments to, the Performing Organizations;

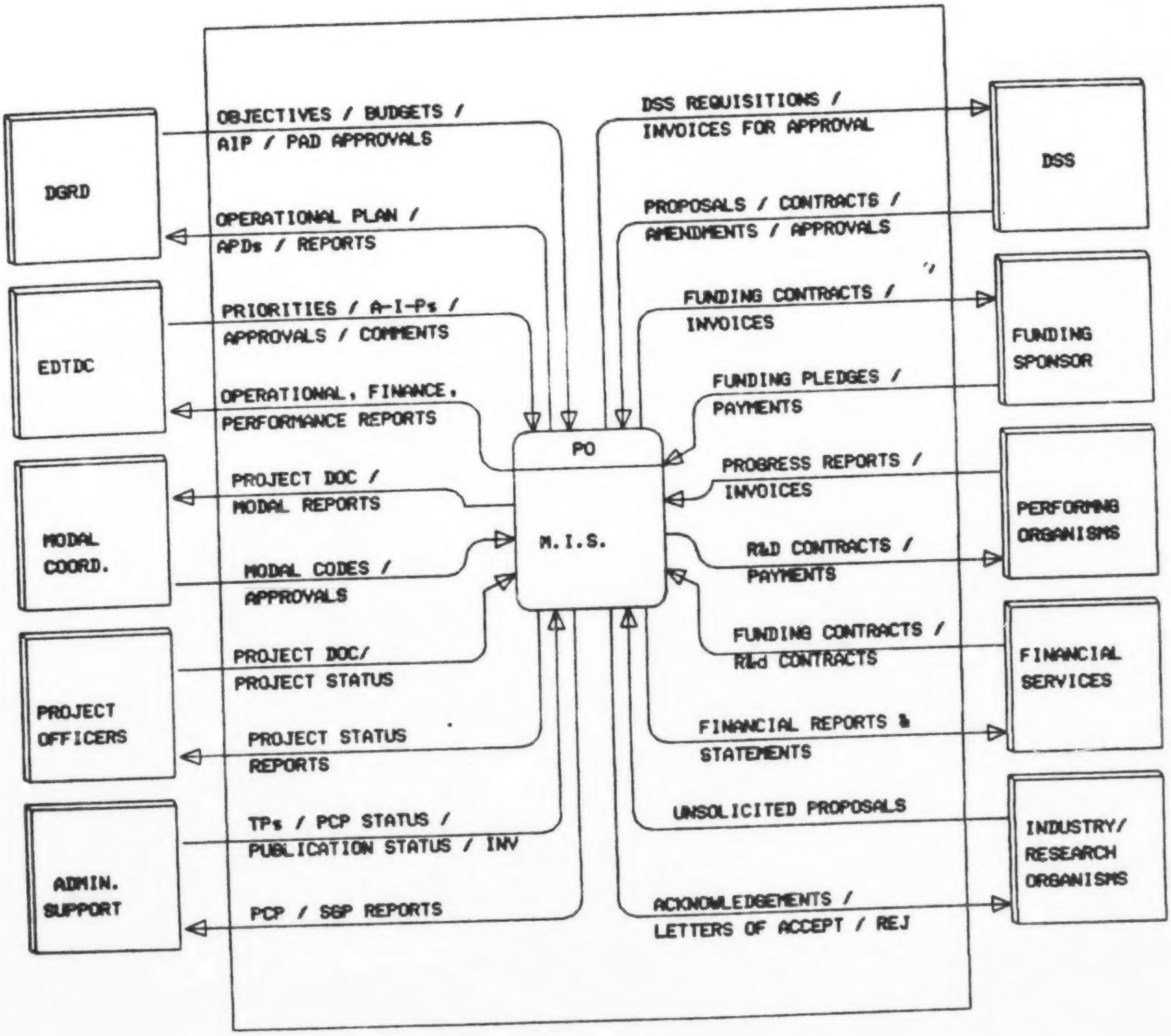

DGRD
EDTDC
MODAL COORD.
PROJECT OFFICERS
ADMIN. SUPPORT
OBJECTIVES / BUDGETS / AIP / PAD APPROVALS
OPERATIONAL PLAN / APDs / REPORTS
PRIORITIES / A-I-Ps / APPROVALS / COMMENTS
OPERATIONAL, FINANCE, PERFORMANCE REPORTS
PROJECT DOC / MODAL REPORTS
MODAL CODES / APPROVALS
PROJECT DOC/ PROJECT STATUS
PROJECT STATUS REPORTS
TPs / PCP STATUS / PUBLICATION STATUS / INV
PCP / SGP REPORTS
PO
M.I.S.
DSS REQUISITIONS / INVOICES FOR APPROVAL
PROPOSALS / CONTRACTS / AMENDMENTS / APPROVALS
FUNDING CONTRACTS / INVOICES
FUNDING PLEDGES / PAYMENTS
PROGRESS REPORTS / INVOICES
R&D CONTRACTS / PAYMENTS
FUNDING CONTRACTS / R&d CONTRACTS
FINANCIAL REPORTS & STATEMENTS
UNSOLICITED PROPOSALS
ACKNOWLEDGEMENTS / LETTERS OF ACCEPT / REJ
DSS
FUNDING SPONSOR
PERFORMNG ORGANISMS
FINANCIAL SERVICES
INDUSTRY/ RESEARCH ORGANISMS

FIGURE 2.1 M.I.S. CONTEXT DIAGRAM

- validation and processing of invoices to, and payments from, the Funding Sponsors;

- a variety of operational and financial management reports for all levels of TC and TDC Management.

d. On-line and batch maintenance of TDC's active R&D Project information used for:

- classification of the R&D Projects in a variety of ways for management reporting purposes;

- monitoring the progress and status of the active R&D projects by TDC Project Officers; and

- production of financial, operational and performance management reports at all levels of management.

e. On-line maintenance of the Project Completion Phase information by the Administrative Services, related to the status of the project deliverables such as draft and final reports, and management and disposal of the Crown assets which has not yet been implemented.

f. On-line maintenance of the R&D Project Publications information by the Administrative Services for the purposes of publications inventory management and distribution of publications.

2.2.1.2 General Ledger System

The General Ledger is a customized system, initially developed in the PDP 11/23/44 PROCOL environment, and later converted to the present PC DOS PROCOL environment. It covers the financial budgeting, accounting and reporting needs of TDC R&D Project activities, as well as the TDC operations and maintenance budgets and expenses, and Payroll and Conference expenses.

The interface between the MIS Financial and G/L systems is manual via the on-line Journal Entry facility for Payments to the performing organizations, and recuperation of funds from the sponsors.

The on-line interfaces with the Payroll and Conference subsystems are integrated within the G/L system.

The following are the major functions covered by the G/L System:

a. On-line maintenance of the annual budgets based on the Transport Canada Financial Coding structure;

b. Manual interface with the MIS System via the on-line Journal Entry facility;

c. Manual interface with the Transport Canada Payroll System via the on-line Journal Entry facility;

d. Payroll Subsystem for on-line entry of payroll data related to the TDC's indeterminate and term employees, as well as the authorized expenses of the TDC staff.

e. Conference Subsystem for on-line entry of expenses related to TDC Conference activity, and posting to the General Ledger System; and

f. Detailed and summary financial reporting by various categories for the operational and financial management needs of TDC, Transport Canada, and the Treasury Board.

2.2.1.3 Person-Month Utilization System (PMU)

PMU is a custom system developed by the SSM Contractor in the present PDP 11/44 PROCOL environment. The major functions include:

a. On-line maintenance of the person-year authorizations, and person-month utilization data, including the employee name and category, status and person-month utilization information; and

b. Production of Person-month Utilization reports in various formats covering the needs of TDC and Transport Canada management.

2.2.1.4 TDC Research Library Systems

The Mailing List and Library Acquisition Systems are custom designed systems initially developed in the PDP 11 PROCOL environment, and later redeveloped in the IBM PC DOS INFORMIX environment.

1. Mailing List System (MLS)

   MLS includes the following functions:

   a. On-line maintenance of mailing addresses related to distribution of TDC R&D Publications in Canada and abroad;

   b. Production of mailing labels by geographical area or area of interest in English, French and bilingual formats; and

   c. Production of mailing lists by geographical area or area of interest.

2. Library Acquisition System (LAS)

   LAS includes the following functions:

   a. On-line maintenance of Purchase Orders for library acquisitions, not including the periodicals;

   b. On-line printing of Purchase Orders on computerized pre-printed forms;

   c. On-line update of Purchase Order status upon receipt of abstracts and materials; and

   d. Production of Open Order and Purchase History reports.

2.2.1.5 Interleaf Desktop Publishing System

The TDC Publishing Services are presently using an Apollo 3000 based Interleaf Desktop Publishing System. The entire system is being leased from Interleaf Canada Inc. with a 3 1/2 year buy-off option for approximately $ 15,000 Canadian. The Interleaf System consists of:

- one Motorola 68020 microprocessor based Apollo 3000 CPU with 4 Mbytes of main memory;

- one serial port for the high resolution monitor, and one parallel port for the laser printer;

- high resolution 19 inch monochrome screen (1152 x 900 pixels);

- mouse pointing device for graphics and text with 3 selection buttons;
- 2 serial asynchronous ports with MODEM control, which would permit addition of an additional publishing workstation screen;
- a Hayes 2400 BPS asynchronous MODEM for remote software maintenance (taking up one of the 2 asynchronous ports);
- Ethernet local area network interface (tranceiver hardware and cables not provided);
- 44 Mbytes disk drive with SCSI interface;
- 60 Mbytes tape cartridge for backups;
- Canon Laser printer.

The software consists of a Standard Interleaf Operating System derived from the UNIX 4.2 BSD standard, and the Interleaf Technical Publishing Software package.

The entire system is on an Interleaf Vendor maintenance contract which provides for all hardware and software maintenance, as well as the initial Publishing software training and support.

2.2.1.6 IBM/3270 Workstation To Ottawa

TDC has presently on its site an IBM/3270 workstation for access to the Transport Canada Network (TCN) facilities and services. The hardware configuration includes an IBM/3274 Communications Controller, an IBM/3178 Workstation, and an IBM/3287 Printer.

The communications processor and workstation are connected to the Transport Canada Network (TCN) via the Regional Informatics Centre in Dorval.

The workstation was provided by the Department's Informatics Services in Ottawa for TDC access of the Department's Material Management System, and DISOSS Document Distribution and Personal Services (on a pilot project basis).

2.2.2 Data Elements and Relationships

Since the data bases of the smaller application systems are relatively trivial (consisting typically of one or two tables per application), or are included in the MIS and G/L data bases below, they are dealt with separately here. The following paragraphs deal with the MIS and G/L databases, including all their subsystems.

2.2.2.1 Management Information System (MIS)

The MIS data base has been designed in a piecemeal fashion over a period of approximately eight years, as additional functions and functional enhancements were added to the original MIS core system.

Due to the piecemeal evolution of the MIS database design, and absence of adequate data modeling and design procedures, it resulted in a non-normalized data structure involving considerable duplication of data and structural elements, as well as a significant proportion of presently unused data elements in a number of tables.

As well, because of the extensive reporting requirements, and the fact that the PROCOL Database Manager requires explicit 'relational' links to indexed data elements in other tables to effect the relational join on multiple tables, the present database structure results in an excessive number of links and indexes causing a severe data maintenance overhead.

Because of the excessive complexity of the present MIS database structure, we are not providing the entity relationship diagrams. Table 2.1 provides the list and brief description of the present MIS files. In addition, Appendix C, Section 1 provides the following existing MIS database documentation:

- a manually maintained list of database tables, including the abbreviated and full table names, and one line descriptions related to the intended purpose and use of the information;
- a one page, graphic list of unidirectional, 'relational' table links between tables; and
- a comprehensive, manually maintained profile of data elements per table for 8 main tables out of the total of 28 tables.

Table 2.1 Description of the MIS Data Entities

Entity Name	Entity Description
MODE	Transportation Mode Information
OBJECTIVE	Modal Objective Information as per TDC's Annual Operational Plan
SUBOBJECTIVE	Modal Sub-Objective as per TDC's Annual Operational Plan
DIVISION	TDC Responsibility Centre Information
SCIENCE	Science Classification for Statistics Canada reports
SPONSOR	Funding Sponsor Information
CONTRACTOR	Performing Contractor Information
ORIGIN	Project Origin Code and Description
REQUISITION	DSS Requisition Information
PROJECT	R&D Project Information
CONTRACT	Sponsor Funding Contract Information
INVOICES	Performing Organization's Invoice Transactions
PAYMENTS	Payment Transactions to Performing Organizations
TIES	Project Sub-Tasks (Ties) Information
EQUIPMENT	Project Equipment Information
PUBLICATION	Project Publication (Report) Information
INVENTORY	Project Publications Inventory Information

2.2.2.2 General Ledger Data Base

The General Ledger database is presently implemented in the PC DOS PROCOL environment. As in the case of the MIS, the poor database design and PROCOL 'relational' links result in excessive structural complexity and performance related overhead.

Table 2.2 provides a list, and a brief descriptions of the present G/L files. In addition, we are providing the PROCOL list of the tables, and table field layouts in Appendix C, Section 2.

Table 2.2 Description of the G/L Data Entities

Table Name	Table Description
CENTRE	Contains the Responsibility Centre Codes and Names
ALLOTMENT CODE	Contains budgets and M-T-D/Y-T-D balances of expenditures by Allotment Codes
BUDGET	Contains budgets and M-T-D/Y-T-D balances of expenditures by Line Object Code
LINE OBJECT	Contains budgets and M-T-D/Y-T-D balances of expenditures by Line Object Code
NOTE:	The Chart Of Accounts structure is apparently inherent in above four tables.
GFI/CUM	Another file of monthly and cumulative budgets
TRANSACTION	Contains G/L financial transactions related to above budget tables
VARIANCE	Contains statistical information on financial budgets, commitments and expenditures
PAYROLL	Contains TDC contract employee and pay information
CONFERENCE	Contains information on conferences and related expenses

2.2.3 System Inputs

2.2.3.1 Management Information System (MIS)

The following narrative describes inputs to the existing automated Management Information System (MIS). Please, refer to the MIS Context Diagram in Figure 2.1, which defines the domain of the present MIS automated system in terms of all the main information flows ('data flows') to and from the MIS, and the sources and recipients of information ('terminators').

The inputs are organized in the logical sequence of information flow within the system, and are grouped by the end-user menus by which they are accessed. For the menu and screen format layouts, please refer to the appropriate Sections in Appendix B.

1. Annual Operational Plan Maintenance Menu

   (MENU pour MAJ/OPL - Appendix B, Section 1).

   a. Create a Modal Code and Title, English and French (menu option 5, screen format HF01).

   b. Modify the Mode Title, English (menu option 2, screen format HF01).

   c. Modify the Mode Title, French (menu option 8, screen format HF01).

   d. Create a Modal Objective (menu option 6, screen format HF01).

   e. Edit a Modal Objective Title, English (menu option 1, screen format HF01).

   f. Edit a Modal Objective Title, French (menu option 9, screen format HF01).

   g. Modify a Modal Objective Title, English (menu option 10, screen format HF01).

   h. Modify a Modal Objective Title, French (menu option 12, screen format HF01).

   i. Modify a Modal Objective Code (menu option 4, screen format HF01).

j. Delete a Modal Objective Record (menu option 3, no screen format used).

k. Modify the Planned Dollar Value for a Modal Objective (menu option 11, screen format HF03).

Please, refer to the Annual Operational Plan Maintenance Menu (MENU pour MAJ/OPL) and Screens in Appendix B, Section 1.

NOTE: Screen formats KF01 and DF01 nowhere referenced.

2. Proposed Projects File Maintenance Menu

(MENU pour MAJ/PPF - Appendix B, Sections 2 and 2.1).

a. Insert a new Proposed Project (menu option 1, screen format BF01).

b. Delete a Proposed Project (menu option 2, screen format BF01).

c. Modify a Proposed Project (menu option 3, screen format BF01).

d. Modify a Proposed Project with EDTDC Comments (menu option 4, screen format BF06).

2.1 Elderly and Handicapped Proposed Projects Maint. Menu

(MENU pour TDPP-EH - Appendix B, Section 3.1).

a. Enter an E&H Proposed Project (menu option 1, submenu 1, option 1, screen format BF01).

b. Modify an E&H Proposed Project (menu option 1, submenu 1, option 2, screen format BF01).

c. Modify Budgetary Estimates For An E&H Proposed Project (menu option 1, submenu 2, option 1, screen format ENT/EH).

d. Delete an E&H Proposed Project (menu option 1, submenu 2, option 2, no screen format).

3. MIS Maintenance Menus

The MIS system is divided into a set of custom designed user menus providing access to the set of MIS maintenance functions required by individual users. A structured, system-wide menu system which would convey a clear functional structure of the MIS application is not provided.

3.1 Maintenance of DSS Requisitions

(MENU pour MAJ - Appendix B, Section 3.1).

a. Insert a new Requisition/Funding Agreement with a Funding Sponsor for an R&D Contract (menu option 4, screen format QF01).

b. Modify a Requisition for a Funding Contract with a Funding Sponsor Related to an R&D Contract (menu option 5, screen format QF01).

3.2 Maintenance of A-I-P Funding Contracts

(MENU pour MAJ - Appendix B, Section 3.2).

a. Create a New Funding Contract record by duplicating it from an existing Funding Contract Record (menu option 33, no screen format).

b. Enter a New Funding Contract Record (menu option 30, screen format CF09).

c. Revise a New Funding Contract Record (menu option 32, screen format CF09).

3.3 Maintenance of Funding Contract Acceptance/ Amendments

(MENU pour MAJ - Appendix B, Section 3.3).

a. Amendment of a Funding Contract record (menu option 6, screen format unnumbered).

b. Acceptance of a Contract (menu option 34, screen format unnumbered).

(MENU pour FORTIN).

c. Update DSS Office related information of a Funding Contract Record (menu option 1, screen format IF02).

3.4 Maintenance of Funding Contract Narrative Information

(MENU pour NARRATIF - Appendix B, Section 3.4).

a. Enter the Scope and Objective texts related to a Funding Contract record (menu option 9, screen formats MF01 and AF01).

b. Enter the Project Officer's Remarks related to a Funding Contract record (menu option 10, screen format unnumbered).

c. Update a Project Officer's Remarks text related to a Funding Contract record by duplicating it from the REMARKS table (menu option 1, screen format unnumbered).

d. Update a Project Scope text related to a Funding Contract record by duplicating it from the SCOPE table (menu option 2, screen format AF01).

e. Update a Project Purpose text related to a Funding Contract record by duplicating it from the PURPOSE table (menu option 2, screen format not provided).

f. Update a Project Objective text related to a Funding Contract record by duplicating it from the PROJECT OBJECTIVE table (menu option 4, screen format MF01).

g. Edit a Project Objective text related to a Funding Contract record (menu option 6, screen format MF01).

h. Edit a Scope text related to a Funding Contract record (menu option 7, screen format AF01).

i. Modify a Project Purpose text related to a Funding Contract record (menu option 5, screen format not provided).

j. Modify a Project Objective text related to a Funding Contract record (menu option 12, screen format MF01).

k. Modify a Scope text related to a Funding Contract record (menu option 13, screen format AF01).

l. Modify the Address information of a Performing Organism related to a Funding Contract record (menu option 14, screen format unnumbered).

m. Delete a Project Officer's Remarks text from the REMARKS table (menu option 3, no screen format).

3.5 Maintenance of R&D Project Related Information

(MENU pour MAJ - Appendix B, Section 3.5).

This information is normally provided by the Project Officers on the MIS Data Entry/Data Entry Feedback forms, and is maintained on both, the Funding Contract and Project records, and on the related tables linked to both via the PROCOL 'relational links'.

a. Create the Funding Sponsor record related to a Funding Contract, if one does not already exist (menu option 26, screen format TY01).

b. Modify the Funding Sponsor record information related to a Funding Contract (menu option 25, screen format TY01).

c. Insert a new Performing Organism record, if one does not already exist, related to an R&D Project and Funding Contracts (menu option 11, screen format OF01).

d. Update the Funding Contract records with the Performing Organization's information from the Project Entry Form page 1 (menu option 24, screen format CF55).

e. Update the Funding Contract Records with various classification information from the MIS Data Entry Form pages 2 & 3, and used for various reporting purposes (menu option 23, screen format CF44).

f. Update the Funding Contract records with the information pertaining to project deliverables, publication requirements, and language requirements information (menu option 27, screen format DF33).

g. Copy a Funding Contract record from a previous fiscal year when a Funding Contract spans two or more fiscal years (menu option 9, no screen format).

h. Modify the Funding Amount of a Funding Contract record (menu option 39, screen format CF07).

i. Update the Status/Closing Date of a Funding Contract record (menu option 20, screen format unnumbered).

j. Create a new Project Task (Tie/Capafe) record related to a Funding Contract (menu option 16, screen format TF01).

k. Modify a Project Task (Ties/Capafe) record related to a Funding Contract (menu option 17, screen format TF01).

l. Batch creation and update of PROCOL 'relational links' related to a new/updated Project record (menu option 31, no screen format).

m. Create/update the R&D PROJECT record information by batch procedure from the corresponding Funding Contract records (menu option 28, no screen format).

NOTE: This procedure is executed on a weekly basis.

3.6 Maintenance of Performing Organizations' Invoices

(MENU pour MAJ - Appendix B, Section 3.6).

a. Insert a new invoice from a Performing Organization related to an R&D Contract and one or more Funding Contracts (menu option 1, screen format FF01).

b. Modify a new invoice from a Performing Organization related to an R&D Contract and one or more Funding Contracts (menu option 3, screen format FF01).

c. Modify the date received from DSS of an invoice sent to DSS for approval (menu option 2, screen format FF01).

d. Modify the Control (Contract) number of an invoice from a Performing Organization related to an R&D Contract and one or more Funding Contracts (menu option 14, no screen format).

3.7 Maintenance of R&D Project Site Visit Information

(MENU pour MAJ/SITE VISIT - Appendix B, Section 3.7).

a. Enter information for, and designate an R&D Project for Site Visit (menu option 1, screen formats EFI01 and EFI02).

b. Modify the Site Visit information related to an R&D Project (menu option 2, screen formats EFI02 and EFI03).

3.8 Maintenance of Project Publication Information

(MENU pour MAJ - Appendix B, Section 3.8).

a. Entry of a new TP # and other publication information related to an R&D Project (menu option 1, screen format PF02).

b. Modify the Publication information related to an R&D Project (menu option 2, screen format PF02).

c. Modify a TP # related to an R&D Project Publication (menu option 3, no screen format).

d. Modify the information related to the Company (Performing Organism) responsible for an R&D Project Publication (menu option 4, no screen format).

e. Modify the Project Officer's Name responsible for the R&D Project Publication (menu option 5, no screen format).

f. Modify the name of the TDC Manager (Division Chief) responsible for an RD Project (menu option 6, no screen format).

g. Modify the Publication Descriptive and Classification information (menu option 7, no screen format).

h. Update a Publication record to "Out Of Print" Status (menu option 8, screen format PF02).

i. Update a Publication record to "Draft" Status (menu option 9, screen format PF02).

j. Delete a Publication in "Draft" Status (menu option 10, no screen format).

k. Modify a Publication record to "Out Of Print" or "Draft" Status (menu option 11, no screen format).

l. Entry of a Publication record with no TP # (menu option 12, screen format PF02).

m. Entry of a Publication Receipt into Inventory (menu option 14, no screen format).

n. Modify the Modal Subject Reference Code related to a Publication (menu option 15, no screen format).

o. Modify the information related to Publication Master of a Publication record (menu option 16, no screen format).

p. Modify the Inventory Location Code of a Publication (menu option 17, no screen format).

q. Create a new Publication Section Record related to a number of Publications (menu option 18, no screen format).

r. Modify a Publication Section Record related to a number of Publications (menu option 19, no screen format).

Please, refer to the interactive deluge narrative in Appendix B, Section 3.8).

3.9 Maintenance of Publications Distribution Mailing List

(MENU pour ETIQUETTE - Appendix B, Section 3.9).

a. Insertion of a new Mailing List record (menu option 1, screen format ET01).

b. Modification of a Mailing List record (menu option 2, screen format ET01).

c. Delete a Mailing List record (menu option 3, no screen format).

3.10 Maintenance of Project Completion Phase Information

(MENU pour PCP - Appendix B, Section 3.10).

a. Update of an R&D Project's Completion Phase Status (menu option 4, screen format DF03).

b. Backtrack the Completion Status of an R&D Project by one Phase (menu option 2, no screen format).

c. Correct (Modify) a Completion Status record (menu option 5, screen format DF02).

d. Archive an R&D Report Publication (menu option 6, no screen format).

3.11 Modal Coordinators' Maintenance Functions

(MENU pour Modal Coordinators - Appendix B, Section 3.11).

2.2.3.2 General Ledger System Inputs

The General Ledger System was initially implemented and operated in the PDP 11 PROCOL environment. Because of the poor performance of the PDP 11/44, the G/L system was subsequently converted to the IBM PC DOS PROCOL environment, and is currently running on an IBM PC/3270 microcomputer.

1. General Ledger Maintenance Menu

(MENU pour MAJ - Appendix B, Section 4.1).

a. Create a new Budget (Budget File and Line Object File records - menu option 10, screen format BF02).

b. Modify a Budget (Budget File and Line Object File records - menu option 10, screen format BF02).

c. Enter Annual Budgets (menu option 7, screen format BF02).

d. Modify the Name of Line Object (menu option 8, screen format NF02).

e. Enter a General Ledger Journal Transaction (menu option 2, screen format TF02).

f. Modify a General Ledger Journal Transaction (menu option 9, screen format TF02).

g. Modify Expense Account Mileage (menu option 6, no screen format).

2. Payroll Menu

(MENU pour PAYROLL - Appendix B, Section 4.2).

a. Insert an Employee Record (menu option 1, screen format PF01).

b. Enter a Pay Record entry (menu option 7, screen format PF01).

c. Modify an Employee/Pay record (menu option 5, screen format PF01).

d. Delete an Employee/Pay record (menu option 2, screen format PF01).

3. Financial Manager's Menu

(MENU pour ANTOINE - Appendix B, Section 4.3).

a. Modify the Forecast of Expenditures by Line Object (menu option 2, screen format unnumbered).

b. Modify Financial Commitments by Line Object (menu option 7, screen format unnumbered).

4. Conference Maintenance Menu

(MENU pour CONFERENCE - Appendix B, Section 4.4).

a. Enter Conference/Expenses information (menu option 2, screen format KT01).

b. Correct the Amounts of Expenses of a Conference/Expenses record (menu option 3, screen format KT01).

c. Insert Direct Conference/Expenses record (menu option 4, screen format KT01).

d. Modify a Conference/Expenses record (menu option 6, screen format KT01).

2.2.3.3 Person-Month Utilization System Inputs

(MENU pour MAJ - Appendix B, Section 5).

1. Enter a new Person-Month Utilization Record (menu option 6, screen format RF01).
2. Modify a Person-Month Utilization Record (menu option 7, screen format RF01).
3. Delete a Person-Month Utilization Record (menu option 9, no screen format).
4. Set a Person-Month Utilization Record to Zero (menu option 10, no screen format).

2.2.3.4 TDC Library System Inputs

2.2.3.4.1 Library Mailing List System (MLS)

(MENU MLS - Appendix B, Section 6.1).

1. Insert, Modify, Delete and Display a Mailing Address record (menu option 1, screen format 6.1).

2.2.3.4.2 Library Acquisition System (LAS/SAB)

(MENU SAB/LAS - Appendix B, Section 6.2).

1. Insert, Modify, Delete and Display a Purchase Order Record (menu option 1, screen format 6.2.1).
2. Change Purchase Order Status (menu option 5, screen format 6.2.2).

2.2.4 System Outputs

The outputs of the present automated TDC Management Information Systems are described in terms of:

a. The narrative listing all system outputs in the sequence of information flow within the MIS System, and the structure of the user menus which provide access to the reports;

b. Sample reports provided in the appropriate sections of Appendix A; and

c. The MIS Context Diagram in Figure 2.1, which defines the domain of the MIS automated system in terms of the main information flows ('data flows') to and from the MIS system, and the sources and recipients of information ('terminators').

2.2.4.1 Management Information System (MIS) Outputs

The MIS system outputs (reports) are grouped into a set of custom designed menus for each MIS user, providing to each user access to specifically authorized set of reports. As in case of system inputs, a separate structured set of MIS report menus showing a clear structure of the MIS reports is not provided.

1. Annual Operational Plan Reports

   (MENU pour OP/PLN - Appendix A, Section 1).

   a. Operational Plan Modal Summary Report (menu option 1, sample reports 1.1 and 1.2).

   b. Operational Plan Modal Summary Report (menu option 2, sample reports 1.1 and 1.2).

   c. Operational Plan Overall Summary Report (menu option 3, sample report 1.3).

   d. Operational Plan Detailed Report (menu option 4, sample report 1.4).

2. Proposed Project Reports

(MENU pour OP/PLN - Appendix A, Section 2).

a. The TDC Proposed Projects Report (sample report 2.1) by:

- Responsibility Centre (menu option 5)
- Transportation Mode (menu option 6).

3. MIS Report Menus

(Liste des MENUS pour MIS - Appendix A, Section 3).

The MIS reports listed here are grouped by the structure of the end-user menus through which they are accessed.

3.1 MIS Reports Menu

(MENU pour RAPPORT - Appendix A, Section 3.1).

a. Mailing Address Tickets of Performing Organizations (menu option 1, sample report 3.1.1).

b. List of Performing Organizations (menu option *3, sample report 3.1.2).

c. Summary/Detailed Report of R&D Project Ties (Tasks) related to a Funding Contract (menu option 4), providing:

- The Summary Report of Tasks related to a Funding Contract (sample report 3.1.3); and
- The Detailed Report of Expenditures for each Task related to a Funding Contract (sample report 3.1.4).

d. Funding Contract Transaction Report (menu option 5, sample report 3.1.5).

e. List of Payables at Year End (PAYE) Active and Completed (menu option 6, sample report 3.1.6).

f. List of Payables at Year End (PAYE), Active Only (menu option 7, sample report 3.1.7).

3.2 Finance Manager's Reports Menu

(MENU pour ANTOINE - Appendix A, Section 3.2).

a. Statement of Professional and Special Services Over $ 50,000 (menu option 1, sample report 3.2.1).

b. List of Funding Contracts by Project Officer (menu option 2, sample report 3.2.2).

d. Annual Expenditure Report (menu option 7, sample report 3.2.3).

e. List of Funding Sponsor Records in A-I-P and Negotiation Status (menu option 8) provides:

   - Positive Sponsor Funding Contract Records (sample report 3.2.4); and

   - Negative Sponsor Funding Contract Records (sample report 3.2.5).

3.3 TDC Disabled and Elderly Research Projects Menu

(MENU pour TDPP-EH - Appendix A, Section 3.3).

a. List of Disabled and Elderly Research Projects (menu option 1, submenu option 3, sample report 3.3.1).

3.4 MIS Status Reports Menu

(MENU pour STATUS REPORT - Appendix A, Section 3.4).

Status reports are an important element of the MIS Financial reporting subsystem, and consist of:

a. List of Funding Contracts Exceeding Annual Budget (menu options 1 and 2, sample report 3.4.1).

b. Status Report (menu options 3 and 6, sample report 3.4.2).

c. Status Report Without Remarks (menu option 5, sample report 3.4.3).

e. Status Report Without Remarks (menu option 7, sample report not provided).

3.5 Project Narrative Menu

(MENU pour NARRATIVE - Appendix A, Section 3.5).

a. Project Profile Sheet (menu option 11, sample report 3.5.1).

3.6 Negative Funding Contracts Menu

(MENU pour PROJET NEGATIF - Appendix A, Section 3.6).

a. Funding Contract Monthly Recuperation Reports (menu option 2) provides two reports:

  - Recuperation Report of Measures Taken (sample report 3.6.1); and
  - List of Negative Funding Contracts (sample report 3.6.2).

3.7 End of Month Reports

(MENU pour RAPPORTS FIN DE MOIS - Appendix A, Section 3.7).

a. Master Card Report for One Funding Contract (menu option 2, sample report 3.7.1).

b. Master Card Report for All TDC Funding Contracts (menu option 3, sample report 3.7.2).

c. Master Card Report for One R&D Project by Month (menu option 4, sample report 3.7.3).

d. List of Contractors (menu option 5, sample report 3.7.4).

e. List of Funding Contracts by Mode and Funding Sponsor (menu option 6, sample report 3.7.5).

f. New Budgets Summary Report by Responsibility Centre (menu option 7, sample report 3.7.6).

g. New Budgets Summary Report by Transportation Mode (menu option 8, sample report 3.7.7).

h. End of Month Reconciliation Reports Print

menu option 9, End-of-Month Reconciliation Reports Print function compiles and prints the following reports:

- The Recuperation Report of Measures Taken (please, refer to paragraph 3.6.1 above).
- List of Negative Funding Contracts (please, refer to paragraph 3.6.2 above).
- Project Profile Sheet Reports for all TDC R&D Projects (please, refer to paragraph 3.5.1 above).
- R&D Project Status Reports for All Active Projects (please, refer to paragraph 3.4.2 above).
- List of Funding Contracts Exceeding The Annual Budget (please, refer to paragraph 3.4.1 above).
- TDC Disabled and Elderly Research Projects (please, refer to paragraph 3.3.1 above).
- TDC R&D Projects Listing by Sponsoring Agency (sample report 3.7.8).
- Budget Master Card Balance Sheet (sample report 3.7.9).
- Active Contracts and Contributions Report by Responsibility Centre (sample report 3.7.10).
- Completed Contracts and Contributions by Responsibility Centre (sample report 3.7.11).
- TDC Project Listing by Sponsoring Agency Authorized for Responsibility Centre (sample report 3.7.12).
- Verification and Reconciliation of Project Revenues (sample report 3.7.13).
- Monthly Reconciliation Report of Contract Expenditures - "DSS Batch" Monthly Listing (sample report 3.7.14).

- Monthly Reconciliation Report of Contract Expenditures - "G/L Monthly Totals" (sample report 3.7.15).

3.8 MENU pour FORTIN Reports

(Appendix A, Section 3.8).

a. Funding Contract Status Listing (menu option 1, sample report 3.8.1).

b. Record of Consulting and Professional Services Forms (menu option 2, sample report 3.8.2).

3.9 Energy Program Reports

(MENU pour ENERGY - Appendix A, Section 3.9).

a. Consolidated Energy Program Financial Status Report (menu option 2, sample report 3.9.1).

b. Energy Program Financial Status Report by Program (menu option 3, sample report 3.9.2).

c. Funds Recuperation Report by Program (menu option 4, sample report 3.9.3).

d. Consolidated Funds Recuperation Report for All Programs (menu option 5, sample report not provided).

3.10 MIS Maintenance Screen

(MENU pour MAJ - Appendix A, Section 3.10).

a. Transaction Report for a Funding Contract Dated Before FY 1983 (menu option 5, sample report 3.10.1).

b. Transaction Report for A Funding Contract For FY 1983 or later (menu option 5, sample report 3.10.1).

c. Funding Contracts Inquiry by Requisition Number (menu option 15, report format not provided).

d. Transaction Report for a Funding Contract Task (Ties) or Payable at Year-End (PAYE), (menu option 19, sample report 3.10.2).

e. MIS Retroactive Data Entry Form Print (menu option 19, sample report 3.10.3).

3.11 Requisition and Invoice Maintenance Menu

(MENU pour MAJ - Appendix A, Section 3.11).

a. Invoice Inquiry (menu option 7, screen format 3.11.1).

b. Requisition Inquiry (menu option 9, screen format 3.11.2).

c. Funding Contract Number Inquiry by Requisition Number (menu option 12, sample report 3.11.3).

3.12 Requisition and Invoice Reports Menu

(MENU pour LISTE - Appendix A, Section 3.12).

a. Follow-up Reports (menu option 1) on:

    - Late Claims for Progress Payment Report by Project Officer (menu option 1, sample report 3.12.1); and

    - Late Claims for Progress Payment Report for all Projects (menu option 1, sample report 3.12.2).

b. List of Late Requisitions (menu option 3, sample report 3.12.3).

c. Follow-up Reports (menu option 3) on:

    - Late Requisitions Report by Responsibility Centre (sample report 3.12.4); and

    - Late Agreements /Service Contracts Report by Responsibility Centre (sample report 3.12.5).

d. List of Funding Agreements (menu option 3, sample report Not provided).

e. List of Late Telexes (menu option 5, sample report Not provided).

f. List of Invoices Sent To DSS (menu option 6, sample report 3.12.6).

g. List of Invoices Received (menu option 7, sample report not provided).

h. List of Requisitions Sent To DSS (menu option 7, sample report not provided).

i. List of Contracts/Agreements Received (menu option 9, sample report not provided).

j. List of Invoices Sent To-Date (menu option 10, sample report not provided).

k. List of Invoices For Cancellation (menu option 11, sample report not provided).

l. List of Requisitions For Cancellation (menu option 11, sample report not provided).

m. List of Payables At Year-End (PAYE), (menu option 11, sample report 3.12.7).

n. List of Transactions In Pre-Invoice For Cancellation (menu option 11, sample report 3.12.8).

3.13 Project Officers' Reports Menu

(MENU pour USAGERS - Appendix A, Section 3.13).

a. Project Profile Sheet for one Project, all Projects, or one Mode (menu option 1, sample report 3.13.1).

b. Funding Contract Transactions for one Funding Contract, for one Project Officer, for one Funding Sponsor, or for one Responsibility Centre (menu option 2, sample report 3.13.2) .

c. List Of Funding Contracts for one Sponsor by Responsibility Code (menu option 31, sample report 3.13.3).

d. List of Projects for one Contractor (menu option 4, sample report 3.13.4).

e. List of Funding Contracts for one Central Registry File (menu option 5, sample report 3.13.5).

f. List of Contractors for one Project Officer (menu option 61, sample report 3.13.6).

g. List of Proposed Projects for one Project Officer, one Responsibility Centre, or one Mode (menu option 7, sample report 3.13.7).

h. MIS Project Entry Form for Retroactive Entry (menu option 8, sample report 3.13.8) and Data Entry Feedback Form (sample report 3.13.9).

i. List of Bridge Funded Contracts by Responsibility Centre (menu option 9, sample report 3.13.10).

j. List of Funding Contracts for one Project Officer (menu option 10, sample report 3.13.11).

k. Financial Status Report for one Funding Contract (menu option 11, sample report 3.13 12).

3.14 Modal Coordinators Menu

(MENU pour $COORDNT - Appendix A, Section 3.14).

a. Specific Project Information Report (menu option 1, sample report 3.14.1).

b. Three Year Modal Plan Report (menu option 2, sample report 3.14.2).

c. General Program Information Report (menu option 7, sample report 3.14.3).

d. Energy Conservation Project Information Report (menu option 8, sample report 3.14.4).

f. Energy Conservation Program Report (menu option 11, sample report 3.14.5).

g. Liquid Fuels Plan (menu option 12, sample report 3.14.6).

h. Energy Conservation and Liquid Fuels Plan by Project Officer (menu option 13, sample report 3.14.7).

i. Two Year Modal Plan (menu option 14, sample report 3.14.8).

3.15 EDTDC Reports Menu

(MENU pour EDTDC - Appendix A, Section 3.15).

a. Projects In A-I-P Status Report (menu option 1, sample report 3.15.1).

b. R&D Expenditures Report by Performing Organization Type (menu option 2, sample report 3.15.2).

c. R&D Expenditures Report by Geographical Region (menu option 3, sample report 3.15.3).

d. R&D Expenditures Report For One Contractor (menu option 4, sample report 3.15.4).

e. Funding Contracts In Negotiation Status (menu option 5, sample report 3.15.5).

f. Details of Ties for one Funding Contract (menu option 6, sample report 3.15.6).

g. R&D Report, Budgetary Summary by Project Officer (menu option 7, sample report 3.15.7).

h. Detailed R&D Report, Funding Contracts by Project Officer (menu option 7, sample report 3.15.8).

i. Report of Current Year Outstanding Invoices (menu option 8, sample report not provided).

j. Project Financial Status Report (menu option 9, sample report 3.15.10).

k. Report of Projects In Reporting Status (menu option 11, sample report 3.15.11).

l. Report of Funding Contracts Older Than One Year (menu option 12, sample report 3.15.12).

3.16 DGRD Reports Menu

(MENU pour DGRD - Appendix A, Section 3.16).

a. Contractor Information Report For One Contractor (menu option 1, sample report 3.16.1).

b. Project Financial Status Report (menu option 2, sample report 3.16.2).
c. List of Funding Contracts By Modal Category (menu option 6, sample report 3.16.3).

d. Reports of Specific R&D Programs (menu option 7):

- Report of Specific R&D Programs by Sponsors (sample report 3.16.4);

- Energy Conservation & Liquid Fuels Report by Sponsors (sample report 3.16.5);

- Elderly and Handicapped Program (sample report 3.16.6);

- New Proposed Projects Report (sample report 3.16.7);

- Transportation Program Status Report (sample report 3.16.8); and

- List of R&D Projects Wholly or Partially Funded by Energy Sponsors (sample report 3.16.9).

3.17 Reports Menu for Chief of Special Projects

(MENU pour SUEN - Appendix A, Section 3.17).

a. Report on Projects For Site Visit (menu option 1, sample report 3.17.1).

b. Contract Ties Information Report (menu option 2, sample report 3.17.2).

c. Project Reports For EIA Survey (menu option 3):

- Report of Projects Funded by Energy R&D Program, Including Cosponsors (sample report 3.17.3);

- Report of DSS Fees For Energy R&D Projects (sample report 3.17.4); and

- Energy R&D Project Report by Program Elements (sample report 3.17.5).

3.18 Reports Menu for Chief of Technology Applications

(MENU pour WHITEHEAD - Appendix A, Section 3.18).

a. List of Funding Contracts For Technology Applications by Project Officer (menu option 1, sample report 3.18.1); and

b. List of R&D Projects by Project Officer (menu option 2, sample report 3.18.2).

3.19 Project Completion Phase Menu

(MENU pour PCP - Appendix A, Section 3.19).

a. Form Letter Related to Draft Report, English (menu option 1, sample letter form 3.19.1);

b. Form Letter Related to Draft Report, French (menu option 2, sample letter form 3.19.2);

c. Mailing List Request Form, English (menu option 3, sample form 3.19.3);

d. Mailing List Request Form, French (menu option 4, sample form 3.19.4);

e. Report Information Form, English (menu option 5, sample form 3.19.5);

f. Report Information Form, French (menu option 6, sample form 3.19.6);

g. Project Completion Form Letter, English (menu option 7, sample letter form 3.19.7); and

h. Project Completion Form Letter, French (menu option 8, sample letter form 3.19.8).

3.20 Publications Management System

Système de Gestion des Publications (SGP).

(Liste des MENUS pour SGP - Appendix A, Section 3.20).

1. SGP Inquiries Menu (MENU pour ACCESS)

   a. Publication Status Inquiry by Transport Publication Number (TP #, menu option 1, screen format 3.20.1).

   b. List of Publications by Project Officer's Name (menu option 2, sample report not provided).

   c. List of Publications by Performing Organism/ Publisher (menu option 3, sample report not provided).

   d. List of Publications by Subject Keyword Within Title (menu option 4, sample report not provided).

   e. Publication Status Inquiry by Funding Contract # (menu option 5, screen format 3.20.1).

2. SGP Reports Menu (MENU pour RAPPORT)

a. Print Publication File Maintenance Screen Image (menu option 1, screen format PF02).

3. SGP Maintenance Menu (MENU pour MAJ).

   a. Publication Inventory Transaction and Balances List (menu option 13, sample report 3.20.2).

4. SGP Mailing List Menu (MENU pour FTIQUETTE)

   a. Mailing Tickets Print (menu option 4, no sample report).

   b. List of Mailing List Addresses (menu option 5, sample report 3.20.3).

5. SGP Reports Menu (MENU pour LISTE)

   a. List of Publications From An Approval Date (menu option 6, sample report 3.20.4).

   b. Alphabetic List of Performing Organizations (menu option 7, sample report 3.20.5).

   c. List of Publication Inventory Sections (menu option 8, sample report 3.20.6).

   d. List of Publications By Transport Publication Number (menu option 9, sample report 3.20.7).

   e. List of Publications By Title (menu option 10, no sample report).

2.2.4.2 General Ledger System Outputs

1. General Ledger Maintenance Menu

   (MENU pour MAJ - Appendix A, Section 4.1).

   a. Monthly Budget Extension Detailed Report By Responsibility Centre and Budget Code (menu option 12, sample report 4.1.1).

   b. Monthly Extension Summary Report By Responsibility Centre and Allotment Code (menu option 12, sample report 4.1.2).

   c. Comparative Budget vs. Actual Report By Allotment Code (menu option 14, sample report 4.1.3).

   d. G/L Transaction Inquiry (menu option 15, screen format TF02 in Appendix A, Section 4.1).

   e. G/L Budget Inquiry (menu option 16, screen format BF02 in Appendix A, Section 4.1).

2. General Ledger Reports Menu

   (MENU pour LISTE - Appendix A, Section 4.2).

   a. Report of Salary Advances by Responsibility Centre and Line Object (menu option 1, sample report 4.2.1).

b. Current Month General Ledger Transaction Report by Responsibility Centre and Line Object (menu option 2, sample report 4.2.2).

c. List of M-T-D Actuals by Line Object and Responsibility Centres (menu option 3, sample report 4.2.3).

d. G/L Adjustment Transaction Report (menu option 4, sample report 4.2.4).

e. G/L Transaction Register by Batch # and Line Object (menu option 5, sample report 4.2.5).

f. G/L Transaction Register by Responsibility Centre and Line Object as of specific date (menu option 7, sample report 4.2.6).

g. Y-T-D Report of Actual Expenditures by Allotment Code (menu option 8, sample report 4.2.7).

h. M-T-D/Y-T-D Summary of Actual Expenditures by Responsibility Centre, Major Line Object Code, and Full Line Object Code (menu option 9, sample report 4.2.8).

i. Mileage Report by Line Object, Responsibility Centre, A.P.V. Code, and the Claimant (menu option 10, sample report 4.2.9).

j. List of G/L Accounts by Responsibility Centre, Line Object, Budget Code, and Allotment Code (menu option 11, sample report 4.2.10).

k. Report of Travel Advances by Responsibility Centre, Line Object, Date Issued, A.P.V. Code and Beneficiary (menu option 12, sample report 4.2.11).

l. Report of Budgets, Expenditures, Balances and Variances by Allotment Code (menu option 13, sample report 4.2.12).

m. Status Report of Budgets and Expenditures by Responsibility Centre and Line Object (menu option 14, sample report 4.2.13).

3. Financial Services Manager's Reports Menu

(MENU pour ANTOINE - Appendix A, Section 4.3).

a. Y-T-D Financial Performance Report of Expenditures, Commitments and Variances, and Forecast of Expenditures to End of FY by Type of Expenditure/Allotment Code (menu option 3, sample report 4.3.1).

b. Report of Budgets and Expenditures by Allotment Code and Fiscal Month (menu option 4, sample report 4.3.2).

c. Variance Report of Budgets, Expenditures, Commitments and Forecasts by Line Object (menu option 5, sample report 4.3.3).

d. Final Variance Report of Budgets, Expenditures, Commitments and Forecasts by Line Object (menu option 6, sample report 4.3.4).

4. Budget Reports Menu

(MENU pour RAPPORTS - Appendix A, Section 4.4).

a. Budget Amendment Report of Budgets, M-T-D/Y-T-D Actuals and Balances by Responsibility Centre, Budget Code and Fiscal Month (menu option 2, sample report 4.4.1).

b. Report of Budgets, M-T-D/Y-T-D Actuals and Balances by Responsibility Centre, Budget Code and Fiscal Month (menu option 2, sample report 4.4.1).

5. Payroll Reports Menu

(MENU pour PAYROLL - Appendix A, Section 4.5).

a. Detailed Pay Report by Responsibility Centre, Line Object, and Employee (menu option 8, sample report 4.5.1).

6. Conference Expense Reports Menu

   (Appendix A, Section 4.6).

   a. Report of Conference Allocations, Expenses and Balances by Expenditure Date, A.P.V. Code, Conference Date and Beneficiary (menu option 5, sample report 4.6.1).

   b. Monthly Report of Conference Expenses by Conference Type, Title and Type of Expenses (menu option 8, sample report 4.6.2).

2.2.4.3 Person-Month Utilization System Reports (PMU)

(MENU pour RAPPORT - Appendix A, Section 5).

a. List of Undefined Positions (not Related to Any Responsibility Centre, menu option 1, sample report 5.1).

b. List of Positions, Employees and Allocations by Employee Type and Responsibility Centre (menu option 1, sample report 5.2).

c. Monthly Distribution Report of Person-Month Utilization and Allocations by Employee Type and Responsibility Centre (menu option 2, sample report 5.3).

d. Monthly Person-Month Utilization Exception Report by Exception Code (menu option 3, sample report 5.4).

e. Year-End Forecast of Person-Month Utilization by Month and Resource Type (menu option 4, sample report 5.5).

f. Report of Authorized Person-Month Allocations for Fiscal Year by Month and Resource Type (menu option 5, sample report 5.6).

g. Fiscal Year-End Variance Report (Minimum) of Person-Month Utilization vs. Authorized Allocations by Month and Resource Type (menu option 6, sample report 5.7).

h. Monthly Distribution Report of Planned Person-Month Utilization by Month and Resource Type (menu option 7, no data available for sample report).

i. Fiscal Year-End Variance Report (Maximum) of Person-Month Utilization vs. Authorized Allocations by Month and Resource Type (menu option 8, sample report 5.8).

j. List of TDC Employees by Status for Term and Indeterminate Status (menu option 10, sample report 5.9).

k. List of TDC Employees by Status for Term and Indeterminate Status and Professional Category (menu option 11, sample report 5.10).

l. Monthly Table of Person-Month Utilization, Allocations and Forecast by Resource Type and Variances (menu option 12, sample report 5.11).

m. Monthly Person-Year Utilization Table by Position #, Level, Status and Employee (menu options 12 & 13, sample report 5.12).

n. Annual Person-Year Utilization Table by Position #, Level, Status and Employee (menu options 12 & 13, sample report 5.13).

n. Detailed Monthly Person-Month Utilization Report by Resource and Employee Types (menu option 14, sample report 5.14).

o. List of TDC Employees by Name (MENU pour MAJ, option 11, sample report 5.15).

2.2.4.4 TDC Library System Outputs

2.2.4.4.1 Mailing List System (MLS)

1. (Menu MLS - Appendix A, Section 6.1).

   a. Mailing List Inquiry (menu option 1, screen format 6.1.1).

   b. Mailing Address Inquiry by Usage, Sorted By Company Name (menu option 2, sample report not provided).

   c. Mailing Address Inquiry by Use, Sorted By Postal Code (menu option 3, sample report not provided).

d. List of All Addresses, Sorted By Last Name (menu option 4, sample report not provided).

e. List of All Addresses, Sorted By Company (menu option 4, sample report not provided).

f. List of All Addresses, Sorted By Postal Code (menu option 4, sample report not provided).

g. List of Addresses For One Or More Usages and One Modal Interest (menu option 8, sample report not provided).

h. List of Addresses For One Or More Usages and One Transaction Type (menu option 9, sample report not provided).

i. List of Addresses For Usage/Province, Sorted By Company (menu option 11, sample report not provided).

2. Canadian Mailing Tickets Printing Menu

a. Print One Mailing Ticket Several Times (menu option 1, no sample report).

b. Print Mailing Tickets For One Usage (menu option 2, no sample report).

c. Print Mailing Tickets For Postal Code & Usage (menu option 3, no sample report).

d. Print Mailing Tickets For One Usage & Modal Interest (menu option 4, no sample report).

e. Print Mailing Tickets For One Usage & Transaction Type (menu option 5, no sample report).

f. Print Bilingual Mailing Tickets For Transport Canada, Ottawa (menu option 6, no sample report).

g. Print Mailing Tickets For Transport Canada, French, English (menu option 7, no sample report).

h. Print Bilingual Tickets for Canada Without Transport Canada (menu option 8, no sample report).

i. Print French, English Tickets for Canada Without Transport Canada (menu option 9, no sample report).

3. Foreign Mailing Tickets Menu

   a. Print Bilingual Tickets (menu option 1, no sample report).

   b. Print French, English Mailing Tickets (menu option 2, no sample report).

   c. Print Several Copies Of Mailing Tickets (menu option 3, no sample report).

   d. Print Mailing Tickets For One Usage (menu option 4, no sample report).

   e. Print Mailing Tickets For One Usage & Modal Interest (menu option 5, no sample report).

   f. Print Mailing Tickets For One Usage & Transaction Type (menu option 6, no sample report).

2.2.4.4.2 **Library Acquisition System (SAB/LAS)**

(Appendix A - Section 6.2).

a. Purchase Order Print For One Order (menu option 3, sample report 6.2.1).

b. Purchase Order Print For A Batch Of Orders (menu option 4, sample report 6.2.1).

c. Generate & Print Claim Letters (menu option 4, sample letter not provided).

2.2.5 Interfaces With Other Systems

The following summarizes the interfaces between the General Ledger System and the present MIS and Administrative Support Systems.

1. Management Information System (MIS) Interfaces

   Since the existing General Ledger System is running in the IBM PC/3270 DOS environment, and the MIS System on the PDP 11/44 hardware, the present interface between the MIS and G/L systems is manual, consisting of G/L distributions from:

   a. Payments to the Performing Organizations;

   b. Payments from the external Funding Sponsors; and

   c. Any Adjustments to (a) and (b) above.

2. Payroll Subsystem Interface to General Ledger

   Since the existing Payroll is an integral Subsystem of the General Ledger, the interface to the General Ledger is on-line, with the distribution account coding entered at the Payroll Transaction entry time.

3. Conference Subsystem Interface with General Ledger

   The existing Conference Subsystem is also an integral Subsystem of the G/L, thus the interface with the G/L System is on-line.

4. Library Acquisition System Interface

   Since the existing Library Acquisition System is operated on a separate IBM PC/XT, the present interface with the General Ledger System is manual, consisting of:

   a. Invoices or similar documents received from the Publication vendors, with certification that the materials have been received; and

   b. Any Adjustments related to Claims against (a) above.

2.2.6 Data And Processing Volumes

2.2.6.1 Transaction Volumes

The following tables summarize the transaction volumes based on the information provided by the SSM support staff.

1. MIS Transaction Volumes

Table 2.3 Summary of MIS Transaction Volumes.

Transaction Type	Annual Volume
New R&D Projects	75
New Funding Contracts	150
Funding Contract Status Updates	1,200
MIS Financial Transactions	2,600
Project Status Updates	5,000
Publications Transactions	1,000
Various Other Transactions	500

Total MIS Transactions	10,525

2. General Ledger Transaction Volumes

Table 2.4 Summary of G/L Transaction Volumes

Transaction Type	Annual Volume
G/L Budget Maintenance Transactions	720
General Ledger Transactions	2,600
Other Transactions	1,000

Total G/L Transactions	4,320

3. Person-Month Utilization (PMU) Transaction Volumes

Table 2.5 Summary of PMU Transaction Volumes

Transaction Type	Annual Volume
PMU Update Transactions	750
TOTAL Transactions	15,595

2.2.6.2 Data Storage Volumes

The present MIS mass storage consisting of a 120 Mbytes disk drive is 80 % full, requiring considerable monthly database and library maintenance procedures to provide sufficient free disk space to support the on-going MIS operations.

The existing 120 Mbytes disk drive does not provide the storage space for maintenance program libraries and data bases, thus forcing the performance of on-going program maintenance activities in the production data bases and program libraries. The following table summarizes the utilization of the existing mass storage space.

Table 2.6 Summary of MIS Disk Space Utilization

Object Type	Storage Volume (MB)
Operating System Libraries & Work Space	44.0
PROCOL Program Libraries	11.0
Production Data Bases	27.0
Various User Files	14.0
Free Space	24.0

Total Mass Storage Space	120.0

2.3 PROBLEMS

The following is a summary of the major MIS System problems by topic in order of importance.

2.3.1 System Performance

The most serious of the present MIS System problems is the performance in the present PDP 11/44 hardware, RSX 11M-PLUS Operating System, and PROCOL 4 GL software environment. Our observations of the routine end-user data maintenance and reporting activities have resulted in the following observed response times:

a. The average response time of the Create New Contract Transaction was 7 minutes, timed during the entry of 7 new Funding Contracts related to a new R&D Project.

b. On-line update response time of the Contract Acceptance Transaction was 1 minute on average for retrieval and display of the related records, and 3 minutes for the record update, again signifying the loss of more than 90 % of the Clerk's time.

c. The response times for producing the Data Entry Feedback Form for an R&D Project related to seven Funding Contracts was 5 minutes. During this time the Operator's keyboard was locked, preventing other useful activities.

d. Routine on-line data base inquiry transactions of the Project file records have been timed at 30 seconds, and simple report compilation and display time with keyed access of the Project File resulted in retrieval, sort and display times of 2 to 3 minutes.

The above typical response times were observed with 5 active users on the PDP 11/44 system as follows: one in MIS data entry, two in PROCOL programming mode, and two in report compilation mode.

The observed MIS average response times are much longer than the generally accepted industry standards, as shown in the following table which compares industry response time standards to those observed at TDC.

Table 2.1 TDC MIS Response Times vs. Industry Standards

Transaction Type	MIS System	Industry Standard
Data Entry Transactions	5 sec - 7 min	5 - 10 sec
Record Update Transactions	2 sec - 3 min	2 - 5 sec
On-line Inquiries By Key	15 sec - 30 sec	1 - 3 sec
Simple On-line Reports	2 min - 5 min	10 - 15 sec

The effects of these exceptionally poor response times are:

a. Significant losses of time in most work functions, especially in the Financial Services responsible for most of the data entry activities, and in planning, monitoring and analysis of the R&D Projects by Project Officers and Chiefs of Division who are the largest group of MIS users at TDC.

b. A generally negative attitude on the part of the users toward the MIS System, and a general reluctance to use the existing MIS functions unless it is unavoidable, which severely limits the usefulness of the MIS system, and discourages its further evolution and improvement.

The following narrative summarizes the major causes of these severe performance problems by hardware, operating system, PROCOL 4 GL language, database design, and other causes.

2.3.1.1 System Hardware and Operating System

The present PDP 11/44 system configuration consisting of 1 Mbytes main memory and one 120 Mbytes disk drive was intended to support a total of approximately 20 on-line users, 10 users concurrently.

Assuming a third generation language environment such as COBOL or FORTRAN, and relatively simple on-line system, database structure, and transactions and reports of medium complexity, the actual PDP 11/44 configuration would have resulted in medium response times, and a largely disk bound system due to the single disk drive configuration.

The main, purely hardware related causes of the poor MIS performance are as follows:

a. The hardware selection and capacity planning process did not take due account of the approximately 4-fold memory, CPU, and disk I/O overhead of a typical 'relational data base and 4 GL application environment, as compared to third generation language environment. This resulted in severely undersized hardware capacity for the actual number of users and the resulting system load in the PROCOL application environment.

b. The 64 Kbytes memory addressing limitation of the 16 bit PDP 11/44 processor and the RSX 11M Operating System forced the SSM Contractor to resort to a complex scheme of code and data segment swapping, in order to accommodate approximately 350 Kbytes of PROCOL code, PROCOL generated application pseudocode, and variable amounts of user data within the 64 Kbytes PDP 11M user process partition.

   As well, the third party C Compiler does not produce re-entrant machine code, thus requiring the loading of PROCOL object code into every 64 Kbytes user partition, resulting in a 'real memory to required memory' ratio of 1 to 10, and strongly disk bound system under practically any load profile. In the case of complex on-line programs which use many data and index files concurrently, the response times vary between two to 8 minutes on account of hundreds of disk I/Os related to the code and data swapping activity.

   Even though the SSM contractor is inclined to lay the entire blame for the poor system performance on the 64 Kbytes memory addressing limitation of the RSX 11M Operating System, he did not take advantage of the increased memory addressing capability of the Mapped RSX 11M-PLUS Operating System, which provides additional 64 Kbytes of address space for user data, and 64 Kbytes for the privileged system programs.

c. The inherent character mode operation of the DEC PDP 11 processor, coupled with the relatively high CPU interrupt overhead of the real-time operating systems, and the high character I/O rates associated with the on-line screens and serial printers result in higher CPU utilization, thus slowing the performance of the PROCOL run-time processor.

d. Our observations of the hardware resource utilization using the Resource Monitoring Displays of the RSX 11M-PLUS Operating System established the following:

- any significant data entry activity using complex PROCOL programs results in rapid saturation of the single disk drive at around 45 accesses per second;

- at the point of disk I/O saturation, the CPU time usage does not exceed 25 %, indicating that the disk I/O capacity could be increased at least two-fold to balance the system resource utilization;

- the average size of disk data transfers is around 1.2 Kbytes, indicating that approximately one half of the disk I/O is related to PROCOL code swapping activity, and the remainder to data file activity (based on the 512 bytes disk blocks);

- the size of all PROCOL user tasks is 59,776 bytes, i.e. less than 64 Kbytes (74300 octal 16-bit words).

2.3.1.2 PROCOL Fourth Generation Language Environment

Even though the PROCOL pseudo-relational data base and 4 GL development language enabled TDC to develop its MIS and related applications relatively quickly, it also constitutes the second most important cause of the performance problems, due mainly to the following:

a. PROCOL pseudo-relational database permits relational joins of multiple tables only via explicitly defined table links which must reference keyed data elements in other tables. This results in 11 links and 10 indexes on the most frequently used MIS Funding Contract File, thus greatly increasing the index maintenance overhead of the record insert and update operations.

b. PROCOL uses hashed (computed) index structure rather than more commonly used binary sorted trees (B-trees). This results in more efficient single record access by key, especially for large files, but less efficient multi- record retrievals by key, since sequential table searches must be performed. As well, the unsorted indexes require sorting operations for every sorted query, considerably degrading the performance of many inquiry and report programs.

2.3.1.3 MIS Database Design

The present MIS database design has evolved over a period of nine years in an unstructured manner. Since adequate system-wide data modeling and normalization were not applied, the resulting non-normalized database structure is experiencing serious interrelated problems in the areas of duplication, integrity, access, ownership, and performance.

The following summarizes the major database structural problems:

a. The data structure and ownership problems related to the R&D Project and Funding Contract files were never resolved. This resulted in an almost complete duplication of data fields and PROCOL 'relational' links and indexes in both files, as well as almost doubled the number of links and indexes of the Contract File, thus causing a large part of the performance and disk space utilization problems.

b. The PROCOL technique of splitting files into multiple banks, only one of which is normally accessible at a time by the majority of the present MIS programs, also results in duplication of Project and Contract Records in multiple banks, and prevents easy access to, and full use of, important historical information.

c. The excessive fragmentation of the information related to the R&D Projects and Funding Contracts, due mostly to the pseudo-relational structure of the PROCOL product and the non-normalized database design, restricts the multi-table data accesses (joins) to the predefined PROCOL links and keys, causes excessive overhead of related insert and update operations, and excessive data access and file buffer memory overheads of the resulting frequent multi-record accesses.

d. The pseudo-relational structure of the PROCOL database management system, based on predefined 'relational links' and corresponding indexes, provides little or no possibility of database performance tuning at the application design and database administration levels, and effectively balancing the performance of data retrieval and maintenance operations. This situation is greatly aggravated in database environments requiring complex ad-hoc retrieval capabilities, as is the case with the MIS system.

2.3.2 System Functionality

The present MIS system provides adequate functionality for the Financial Services, Administrative Services, and Management Reporting at the levels of DGRD, EDTDC and, to a lesser degree, the Division Chiefs and Modal Coordinators.

However, it falls far short of the requirements of the Project Officers in the following functional areas:

a. The MIS database and functional design provide for only a small part of the information and functions needed by the Project Officers for effective planning, monitoring and performance analysis of the R&D Projects, causing a number of undesirable effects as follows:

   - the Project Officers perceive the present MIS functions of very limited use relative to their requirements, resulting in an overall negative attitude toward the MIS system;
   - to overcome the limitations of the existing MIS functionality, the Project Officers are resorting to a range of individual solutions with varying degrees of success, depending on their computer proficiency, enterprise in acquiring the required equipment and software, and the time invested;
   - given the number of active R&D projects per Project Officer and the resulting workload, not all Technology Division Chiefs approve of the time spent by the Project Officers on solving the problems that MIS should solve; and
   - lack of technical support and organizational pooling of resources often lead to a relative inefficiency and frustration in individual pursuits of solutions.

b. The summary historical project information is divided into separate file banks by fiscal years. Records of the Funding Contracts that span more than one fiscal year are duplicated. Even though PROCOL query language provides the file bank specification option, most reports do not provide the file bank range selection option, though some report menus provide for selection of individual fiscal years.

The users who use the PROCOL command language for ad hoc reports were not aware of this capability at the time of the interviews, as well as two out of three SSM support staff when submitted a programming request as part of this study. The combination of factors, including the normalized and fragmented data base design, the non-standard and unstructured PROCOL query language, and poor level of training among professional users inhibit full and effective of the historical information.

c. The usefulness of the MIS data base is further limited by the facts that the present MIS hardware and software do not provide support of microcomputers and the required data download capability, and PROCOL data base and 4 GL do not provide an integrated set of relational database, graphics, spreadsheet, and statistical tools required by the Project Officers.

2.3.3 MIS User Interface

The access to the MIS functions is provided via an on-line menu system providing custom menus for each specific user area or individual user. The MIS functions consist of:

- on-line formatted screens and/or interactive dialogue procedures for data entry and maintenance;
- batch processing procedures for periodical database maintenance, and month-end/year-end processing; and
- on-line inquiries and reports displayed on the screens, or spooled to the single off-line printer.

The following summarizes the main problems with the present MIS user interface:

a. The menus are not logically structured into groups of on-line screens, batch processes and report functions. Instead, all types of functions are interspersed in a random fashion on a number of maintenance menus. For example, the MIS Finance Maintenance Menu contains 40 items of all types of functions, thus making it difficult for Operators to locate a specific program function, and causing considerable anxiety to the operators over the possibility of inadvertently triggering a wrong batch process.

b. The menu options are not sufficiently well described to ensure the selection of the desired function in all cases. It is difficult in many cases to relate a printed report to the menu option that produced it, and vise versa (as many as 30 % of the reports lack even the report heading). As well, the menu selection numbers and positions on the menus are subject to change without notifying the users. The result is that many users perceive the MIS system environment as hazardous.

c. The report selection menus and screens do not provide sufficient report selection parameters to enable the users to restrict a report to a required set of data. This leads to needless special programming requests, or forces the users into the PROCOL command mode for ad-hoc reports.

d. The report request menus do not provide for selection of printer devices and number of copies. All spooled output for twenty five Project Officers and five Financial Services staff is directed to a single character printer in the Finance area, which is often dedicated to specific financial reports.

e. Due to poor development standards which do not provide unique reference numbers to menu selection options and the corresponding screen formats and reports, many on-line screens and printed reports are difficult to relate with certainty to the menu selection options which produced them. As well, many reports lack even a report heading.

f. The on-line record insert and update transactions often use the same formatted screen without highlighting of fields that can be modified by a specific update transaction. This leads to frequent puzzlement of the users as to which fields on a large on-line screen can be modified by which transaction, and what will be the effect of transaction effect on the database.

g. The report heading information is seldom sufficient to determine the scope and content of the report, (e.g. whether month-to-date or year-to-date). As well, due to poor data dictionary standards and naming conventions, it is often difficult to interpret the meaning of the presented information.

h. The interactive and batch programs frequently result in operating system error messages with unpredictable effects, and often no apparent effects. Since these error messages are not documented in the user manuals, they cause frequent recourses to the SSM contractor's support staff to clarify the meaning and effect of the error messages.

i. The MIS User Documentation, whether on-line or in user manuals, typically provides one paragraph of descriptive narrative per program. As well, not all user menus are documented. The poor and incomplete user documentation results in:

  - poor overall understanding of the applications, and low level of confidence on the part of the MIS data entry operators and end users; and

  - frequent recourse for help to the SSM maintenance and support staff, resulting in high system maintenance costs.

2.3.4 System and Data Integrity

Since the present MIS has been developed over a period of approximately nine years, (four years in its present PDP 11/44 hardware and RSX 11M / RSX 11M-PLUS Operating System environment), it should by now be a relatively mature and stable system.

Although no recent occurrences of major losses of data were reported, interviews with the MIS users and SSM contractor's staff established the following:

a. The integrity of the combination of the operating system and PROCOL environment is still questionable after four years of operation. Major system crashes still occur, resulting in damaged data files that take considerable time and effort to recover. Both, the SSM contractor's staff responsible for facilities management, and Digital Equipment's technical support staff, lack sufficient in-depth knowledge of the operating system for long-term support.

b. The PROCOL data base manager lacks the data consistency and integrity features that would guarantee the integrity of databases on a routine operational basis without the on-site technical support from the SSM contractor on a permanent basis.

c. The SSM contractor's staff responsible for the on-going development and maintenance of the MIS application do not maintain test databases and program libraries for program debugging and testing. This results in incomplete test data in production files, and changes to the production program libraries without proper notification of users and documentation of changes.

d. Our examination of the MIS Production database showed variable completeness and integrity of data, mostly due to the piecemeal development and implementation of the MIS system, and application maintenance activities in the production database environment.

e. The 132 column non-standard CRT terminals acquired from a third party source are frequently breaking down due to poor quality of equipment, resulting in high maintenance costs and long turnaround times for off-site repairs.

f. The weekly to bi-weekly application library and database backups, and the bi-weekly to monthly full system backups are inadequate in a fully automated environment without maintaining manual records of financial transactions.

g. The scheduled system downtime for backups and scheduled equipment maintenance amounts to 13 % of prime working time over a three month period examined. Taking into account the emergency maintenance procedures due to hardware breakdowns and operating system crashes, the overall system availability would not exceed an estimated 85 % of the prime working time.

2.3.5 MIS Documentation

The SSM Contractor responsible for development, maintenance and support of the MIS application, is also responsible for producing and maintaining the MIS documentation. Our review of the MIS User, Technical, and Operations Documentation found a severe lack of adequate documentation standards, and incomplete documentation in most user areas. The following summarizes the major shortcomings:

1. User Documentation

   The MIS user documentation in most user areas consists of the MIS Documentation Binder, and minimal on-line documentation narrative for some MIS subsystems.

The MIS Documentation Binder consists of:

a. The MIS access instructions, consisting typically of one page of narrative covering the user logon/logoff procedures, instructions on how to abort a program, on switching between PROCOL command and menu modes, a short list of PROCOL error messages, and a brief description of the PROCOL user dialogue procedures;

b. The MIS data base documentation, consisting of:

   - a list of the 28 MIS files, including the full file names, abbreviated file names actually used by PROCOL, and one line of descriptive narrative as to the purpose or data content of files;
   - a list of the PROCOL 'relational links' which enable relational join operations on multiple files;
   - a list of data fields by file, consisting of the field number, name, incomplete key designators, type and length of fields in characters, and a list of codes for PROCOL coded fields; and
   - a full description of fields by file for six out of 28 MIS files.

   With exception of the list of data elements produced by a PROCOL command, all of above documentation is compiled and maintained manually rather than via an integral data dictionary.

c. The collection of the MIS Memoranda pertaining to recent system changes, or other topical information to MIS users; and

d. The list of scheduled PDP 11/44 shutdowns for system backups, preventive maintenance, and expected power fluctuations.

The MIS on-line documentation typically consists of one paragraph of unstructured narrative pertaining to the purpose and meaning of the on-line screen or report function. This is usually not sufficient for determining the exact scope and meaning of the transaction or report without extensive training or frequent use.

In summary, the present MIS User Documentation does not meet a reasonable set of standards applicable to custom developed information systems for end-user environment.

2. Technical System Documentation

Our examination of the MIS Technical Documentation, maintained by the SSM contractor for the purpose of on-going system development and maintenance, shows a similar lack of documentation standards. It consists of the following minimal set of listings produced by PROCOL utilities, some of which are themselves not documented:

a. a list of PROCOL data and index files, relational links between data files, and data and index file statistics;

b. a list of user or PROCOL callable objects by application, including menus, screen formats, report formats, and PROCOL programs; and

c. a list of PROCOL objects callable by other PROCOL programs, including functions and error messages.

There is no high-level system design documentation which would describe the overall structure of the MIS system, including the system inputs and outputs, interfaces with other systems, database structure diagrams, etc. To gain an understanding of the structure and operation of the MIS System, it is necessary to resort to program listings which consist of highly cryptic and unstructured PROCOL procedural code.

The status of the MIS Technical Documentation could have severe impact on maintainability of the MIS Application in case of any turnover of the SSM contractor's staff who are presently at TDC.

2.3.6 MIS Support

Since the inception of the in-house data processing facility at TDC, Systemes sur Mesure PB Inc. (SSM) has been contracted to provide TDC with all computer related advice and services, including:

- consulting advice with respect to selection of the system hardware and software technology, capacity planning, and development methodologies and standards;
- analysis, design, development, and implementation of application systems;
- application systems maintenance, end-user support and facilities management; and

- provision of limited hardware back-up capability in case of a catastrophic hardware failure at TDC.

Our examination of the SSM contractor's performance resulted in the following conclusions:

a. Over the years of their single source contract activity, the objectivity of the SSM's consulting services has been compromised by their continuing business interests (i.e. their advice appears to give priority consideration to furthering their own business interests rather than the Client's.).

b. Since Transport Canada's Communications and Informatics Group did not extend its authority over the TDC Computer Systems in the area of standards and procedures, and TDC did not have the in-house dedicated expertise to do so, the contractor was not obliged to follow any particular development and documentation standards.

   The lack of sound equipment selection and procurement procedures resulted in the choice of inadequate hardware and software technology, and undersized hardware capacity for the processing load and PROCOL application environment, while the lack of sound development methodology and standards resulted in poorly designed, implemented and documented systems, poor system performance and high maintenance and support costs.

c. As well, the on-going viability of TDC information systems became completely dependent on the SSM Contractor by virtue of the nonstandard PROCOL product, and poor and incomplete documentation.

3. USER REQUIREMENTS

3.1 INFORMATION OBJECTIVES AND REQUIREMENTS

The user requirements presented here are based on our review of TDC's existing automated information systems and interviews with TDC's users in all functional areas. TDC's information objectives and requirements are divided into five major categories, and are presented in the order of TDC's priorities, as follows:

1. An improved Management Information System (MIS) which will meet the requirements of TDC Financial Services, Technology Divisions, Administrative Support Services, and TDC and Transport Canada Management. The proposed system must provide the functionality covered by the present MIS, and an improved, integrated Project Management Subsystem.
2. Project Officers' requirements for specialized productivity tools such as document processing, project management, electronic spreadsheet, statistical and graphics packages integrated with the add-hoc reporting capability of the MIS 4 GL environment, and data communication links with Performing Organizations.
3. Stand-alone application systems used by one TDC user area, such as the Person-Month Utilization System (PMU), the Library Acquisition/Periodicals System (LAS/LAP), the Electronic Desktop Publishing System, and TDC's Purchasing System.
4. Information systems services provided by Transport Canada Headquarters Informatics Services, such as the Material Management System (MMS) and Financial Information System (FIS), and by the University of Toronto Library Acquisition System (UTLAS).
5. TDC longer term Office Automation requirements which would include automation of TDC's Project Procedures and Documents on the basis of Document Processing and Electronic Mail Systems.

3.1.1 MIS User Requirements

The MIS user requirements are defined as sets of requirements in logical order of information flow, and where applicable, in the order of TDC priorities. Each requirement is defined in terms of rank (mandatory or optional), information objectives, system functions, and any information constraints.

Figure 3.1, MIS Context Diagram defines the domain of the proposed MIS system in terms of major information flows ('data flows') within the system, and the sources and recipients of information ('terminators').

Figure 3.2, MIS Data Flow Diagram identifies the main MIS functions and the principal relationships between them.

3.1.1.1 TDC Annual Operational Plan Subsystem

Rank: Mandatory.

Objective: On-line maintenance of Annual Operational Plan text and budgetary information by Transportation Mode, and Modal Objectives and Subobjectives for the purposes of preparing and producing the TDC Annual Operational Plan, and operational and management reporting.

Functions: The subsystem must provide the following functions:

a. Insert, modify, delete and inquiry functions for Transportation Mode, Modal Objective and Subobjective Codes, and the related textual and budgetary information by fiscal year and source of funding; and

b. On-line inquiries, formatted reports, and graphic output in various formats based on pre-programmed inquiries and reports, and ad-hoc queries and reports generated by the end users.

Constraints: The subsystem must meet the following constraints:

a. The data tables must be part of an integrated MIS data base to facilitate the reporting functions;

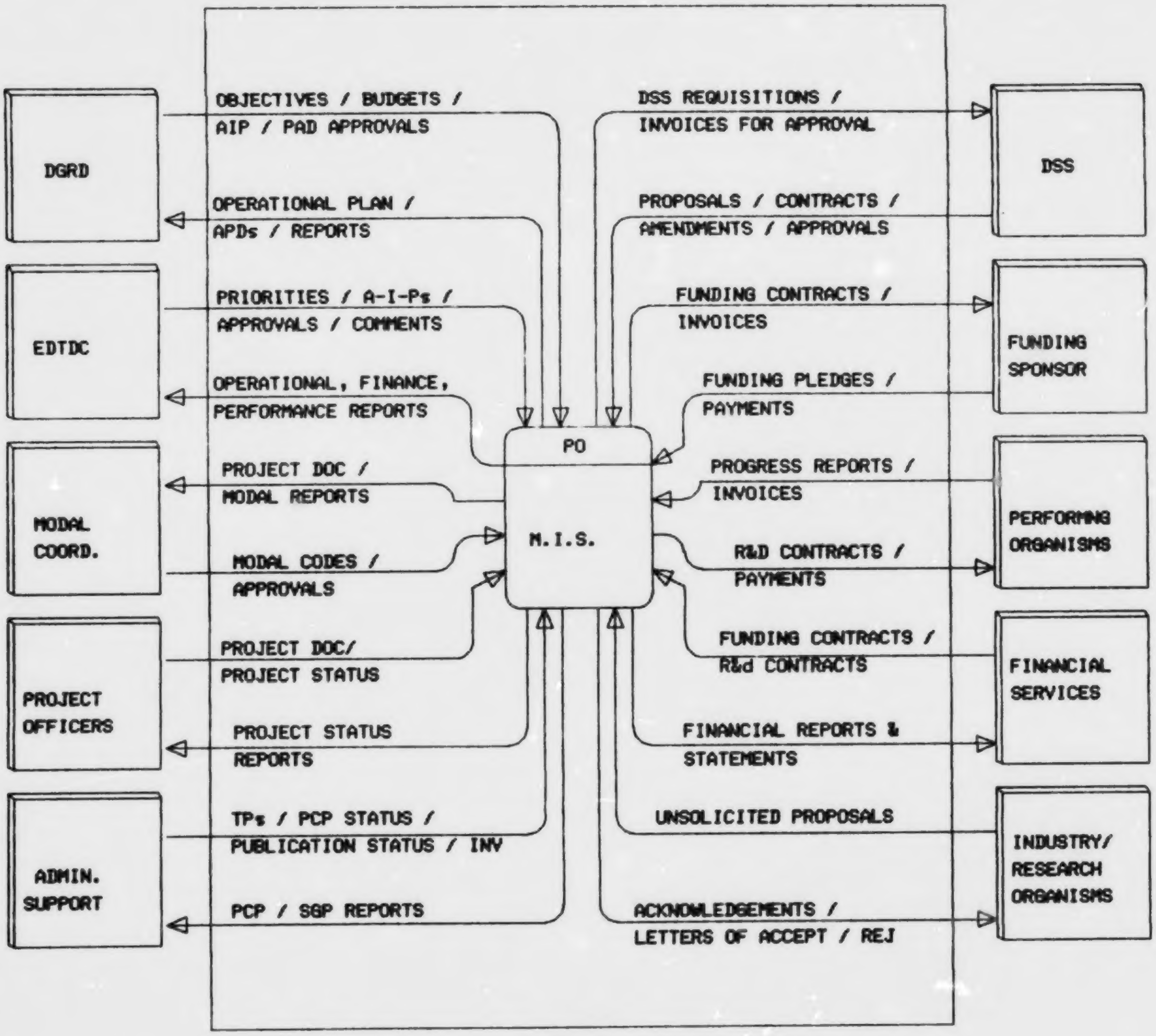

DGRD
OBJECTIVES / BUDGETS / AIP / PAD APPROVALS
OPERATIONAL PLAN / APDs / REPORTS
EDTDC
PRIORITIES / A-I-Ps / APPROVALS / COMMENTS
OPERATIONAL, FINANCE, PERFORMANCE REPORTS
MODAL COORD.
PROJECT DOC / MODAL REPORTS
MODAL CODES / APPROVALS
PROJECT OFFICERS
PROJECT DOC/ PROJECT STATUS
PROJECT STATUS REPORTS
ADMIN. SUPPORT
TPs / PCP STATUS / PUBLICATION STATUS / INV
PCP / SGP REPORTS
PO
M.I.S.
DSS
DSS REQUISITIONS / INVOICES FOR APPROVAL
PROPOSALS / CONTRACTS / AMENDMENTS / APPROVALS
FUNDING SPONSOR
FUNDING CONTRACTS / INVOICES
FUNDING PLEDGES / PAYMENTS
PERFORMING ORGANISMS
PROGRESS REPORTS / INVOICES
R&D CONTRACTS / PAYMENTS
FINANCIAL SERVICES
FUNDING CONTRACTS / R&d CONTRACTS
FINANCIAL REPORTS & STATEMENTS
INDUSTRY/ RESEARCH ORGANISMS
UNSOLICITED PROPOSALS
ACKNOWLEDGEMENTS / LETTERS OF ACCEPT / REJ

FIGURE 3.1 M.I.S. CONTEXT DIAGRAM

b. The maintenance functions must provide separate security controls for update of textual and financial information; and

c. The textual information must be maintained in English or French.

3.1.1.2 Proposed Projects Subsystem

Rank: Mandatory.

Objective: On-line maintenance of the Proposed Project textual and budgetary information by Source Category, related to the Annual Operational Plan.

Functions: The subsystem must provide the following functions:

a. Insert, modify, delete and inquiry functions for the Proposed Projects textual and budgetary information; and

b. On-line inquiries, formatted reports, and graphic output based on programmed inquiries and reports, and ad-hoc queries and reports generated by the end users .

Constraints: The subsystem must meet the following constraints:

a. The data tables must be part of an integrated MIS database to facilitate inclusion of the Proposed Projects information into the Annual Operational Plan, selection of R&D opportunities, and various reporting requirements;

b. The maintenance functions must provide separate security controls for update of textual, financial and management information; and

c. The textual information must be maintained in English and French.

3.1.1.3 Financial Management Subsystem

3.1.1.3.1 Funding Contract Management Subsystem

Rank: Mandatory.

Objectives: Provide an integrated Financial System for maintenance of Budgets, DSS Requisitions, Funding Contracts, and R&D Project financial information, processing of related financial transactions, and production of financial reports.

Functions:

a. On-line maintenance of financial information related to:

  - TDC Budgets by Responsibility Centres and Financial Accounts;
  - DSS Requisitions related to R&D Projects, Funding Contracts, and Amendments; and
  - Funding Sponsors, Agreements, Contracts and Ties;

b. On-line processing of Financial Transactions consisting of:

  - Invoices from, and payments to, the Performing Organizations against the R&D Projects, and Funding Contracts and Ties;
  - DSS approvals related to payment authorization; and
  - Invoices to, and payments from, the Funding Sponsors related to the Funding Contracts and Ties.

c. Production of Financial Management reports for the purpose of managing of budgets and cash flows associated with R&D Contracts, Funding Contracts with all categories of Funding Sponsors, and TDC O&M budgets and allocations.

d. Production of financial management reports related to budgets, funding, and committed and incurred expenditures by various categories related to Funding Sponsors, Performing Organizations, Operational Plan, R&D Programs, Responsibility Centres, etc.

The reporting capability must be provided via pre-programmed inquiries and reports, and ad-hoc queries and reports generated by authorized users. The output must be provided in tabular and graphic forms, and on pre-printed forms.

Constraints: The subsystem must meet the following constraints:

a. The data tables must be integrated with the General Ledger System and Project Management Subsystem in order to avoid duplication of data entry operations, and to facilitate financial reporting by various categories;

b. The data maintenance functions and transactions must provide security access controls for sets of functions by separate authorized users;

c. The data maintenance operations must conform to all applicable accounting standards, and must provide full on-line and off-line audit trails of all financial transactions; and

d. The user interface must be provided in French and English.

3.1.1.3.2 General Ledger System

Rank: Mandatory.

Objectives: Provide a customized General Ledger System integrated with the MIS Financial and Project Management Subsystems for on-line maintenance of budgets by Financial Accounts and Responsibility Centres, and control of budgets, allocations and expenditures related to R&D Projects and TDC Operations and Maintenance.

Functions:

a. Insert, modify, delete and inquiry functions for Responsibility Centres, Financial Accounts, and related budgets, estimates, and expenditures;

b. On-line processing of direct Journal Entry transactions related to various financial transactions and adjustments;

c. Production of financial reports and management summaries related to budgets and expenditures by various categories of funding, expenditures, and R&D activity via pre-programmed functions, and ad-hoc queries and reports.

The outputs must be provided as on-line displays and printed reports, in tabular and graphic formats.

d. Batch interface with Contract Management and Payroll Subsystems; and

Constraints: The G/L System must meet the following constraints:

a. The data tables must be integrated with the MIS Financial Subsystem to avoid duplication of data entry operations, and to facilitate financial reporting by various categories; and

b. The data maintenance functions and transactions must provide security access controls for sets of functions required by specific authorized users.

c. All data maintenance operations and transactions must conform with all applicable accounting standards and provide full on-line and off-line audit trails of all operations.

d. The user interface must be provided in French and English.

3.1.1.3.3 Payroll Subsystem

Rank: Mandatory.

Objective: Provide the TDC Financial Services with an on-line Payroll Subsystem to the General Ledger System for maintenance of Payroll information related to TDC indeterminate and term employees.

Functions:

a. Insert, modify, delete, and inquiry functions for information related to Employees and Pay.

b. On-line entry and processing of periodical employee pay information such as hours worked, expenses, etc.

c. Periodical production of payroll reports by various reporting categories such as Responsibility Centres, classification of employees, type of expenses, etc.

d. Batch interface to the General Ledger System.

Constraints:

a. The Payroll Subsystem must be integrated with the General Ledger System to avoid duplication of data entry operations and facilitate financial reporting.

b. The data maintenance functions and transactions must provide separate security access controls for Employee and Employee Pay record maintenance.

c. The data maintenance operations and transactions must conform to all applicable accounting standards, and provide a full audit trail of all operations.

d. The user interface must be provided in French and English.

3.1.1.3.4 Conference Subsystem

Rank: Mandatory.

Objectives: Provide TDC Financial Services with an on-line subsystem to the General Ledger for maintenance of Conference related expenses, and periodical production of the required reports.

Functions:

a. On-line maintenance of Conference information (insert, modify, delete, and display record);

b. On-line maintenance of the related expenses by Type of Expenses, Responsibility Centres and Employees.

d. Periodical production of Expense Reports by Responsibility Centre, Project Officer, Type of Conference Activity, etc; and

e. Batch interface with the General Ledger Subsystem.

Constraints:

a. The data tables of the Conference Subsystem must be part of the General Ledger data base to avoid duplication of data entry operations and facilitate financial reporting;

b. The data maintenance functions and transactions must provide full security access controls;

c. The data maintenance operations and transactions must conform to all applicable accounting standards, and provide full on-line and off-line audit trails of all operations; and

d. The user interface must be provided in French and English.

3.1.1.4 Project Management Subsystem

The present MIS system does not provide the Project Officers with an effective tool to plan, monitor and analyze the performance of the R&D Projects. To fully meet these requirements, a new MIS Project Management Subsystem will have to be designed and implemented which will meet the basic project management requirements of all Project Officers, Division Chiefs, and Modal Coordinators.

Rank: Mandatory.

Objective: Provide an on-line, integrated Project Management Subsystem for planning, status maintenance, monitoring and analysis of R&D Projects.

Functions:

a. On-line maintenance (insert, modify, delete and inquiry functions) of:

  - R&D Project financial contractual information related to Performing Organizations and Funding Sponsors;
  - Project classification codes and textual information related to the TDC Annual Operational Plan and other categories; and
  - Project planning information, including activities, person-days, milestones, deliverables, and projected cash-flows.

b. Monthly update of R&D Project Status and Forecast information, including percentage of work completed, funds expended, milestones accomplished and deliverables received;

c. Monthly detailed and summary R&D Project Financial Status and Progress Reports for all levels of TDC and Transport Canada management.

   The report output must be provided as on-line displays and printed reports in tabular and graphic formats, and as complex formatted reports of textual and financial information;

d. The project planning input and reporting output functions must be integrated with Project Officers' productivity tools in the intelligent workstation environment.

e. The subsystem must provide an ad-hoc reporting capability in tabular and graphic formats, and provide data export integration with the Project Officers' productivity tools.

Constraints: The Project Management Subsystem must meet the following constraints:

a. The data tables must be integrated with other MIS Administrative and Financial Subsystems to avoid duplication of data entry operations, and to facilitate the financial status reporting by various categories;

b. The data maintenance functions and transactions must provide security access controls for sets of functions performed by separate user areas;

c. The data maintenance operations and transactions must conform to all TDC operational and accounting standards and provide complete audit trails of all changes to contractual, financial and operational information; and

d. The user interface must be provided in French and English.

3.1.1.5 The Project Completion Phase Subsystem (PCP)

The Project Completion Phase Subsystem of the present MIS has come on-line only recently. It is based on TDC's Project Completion Phase Procedures Manual, and covers only the completion status of R&D Report Documents and the related Letter Form correspondence with Performing Organizations. It does not cover the disposal of Crown's equipment and other assets.

Rank: Mandatory.

Objective: Provide for on-line monitoring and management of the R&D Project Completion Phase, including:

a. the Completion Status of R&D Project deliverables, such as Draft and Final Report Documents;

b. Inventory management and disposal of the Crown's equipment and other assets related to R&D Projects.

Functions: The Subsystem must provide the following functions:

a. On-line maintenance (insert, modify, delete, and display) of the R&D Project Deliverables and Schedules, based on the R&D Contract Document, Statement of Work, and Project Schedule;

b. On-line maintenance of R&D Report Document Completion Status against the Project Completion Schedule;

c. Production of the Project Completion Status reports, and Form Letters to Performing Organizations, as per TDC's Project Completion Phase Procedure Manuals;

d. On-line maintenance of Crown's equipment and other assets related R&D Projects;

e. On-line maintenance of the Equipment Disposal Status as per TDC's Project Completion Phase Procedures Manual; and

f. Production of the Project Completion Status reports related to the Crown's equipment and other assets.

Constraints: The Subsystem must meet the following constraints:

a. The data tables must be integrated with the MIS Project Management Subsystem to avoid duplication of data and data maintenance operations, and facilitate project status reporting by various categories;

b. The data maintenance functions and transactions must provide security access controls for sets of functions performed by separate user areas;

c. The data maintenance operations and transactions must conform to all TDC operational and accounting procedures and standards, and provide complete audit trails of all changes to the Crown's equipment and other assets information; and

d. The user interface, and particularly the Form Letters, must be provided in French and English.

3.1.1.6 Publications Management Subsystem

Système de Gestions des Publications (SGP)

The MIS Publications Management Subsystem is an on-line production system serving the purposes of Publications Inventory Management, and Distribution of Publications via an on-line maintained mailing list of recipients of the Publications. It is integrated with the TDC and Transport Canada Libraries' Classification Systems via manual interfaces.

Rank: Mandatory.

Objectives: To provide an on-line Publications Inventory Management and Distribution Subsystem for TDC's R&D Report Documents, and manual interfaces with the TDC and Transport Canada Libraries' Document Classification Systems.

Functions: The subsystem must provide the following functions:

a. On-line maintenance (insert, modify, delete and display) of the Publication and Inventory Location master file information;

b. On-line processing of Publication Receipts, Issues, and Inventory Adjustments;

c. On-line update of TDC Publication Status;

d. Selective Physical Inventory Counting and Update based on printed Count Tickets; and

e. On-line inquiries and reports related to the Publications Inventory Balance, Location and Status;

f. Production of periodical Publication distribution reports, and historical analysis of Publication distribution volumes by various categories;

g. Manual interface with TDC Research Library's Classification System and Mailing List, and Transport Canada Library's Classification System.

Constraints: The Subsystem must meet the following constraints:

a. It must be integrated with the Project Management and Project Completion Phase Subsystems to avoid duplication of data entry;

b. It must conform with the operational procedures of Transport Canada and TDC Administrative Services related to document distribution;

c. The publication inventory transactions must conform with all accounting and operational procedures and standards applicable to handling of Crown's assets, and provide full audit trails;

d. The user interface must be bilingual, French and English.

3.1.1.7 Stand-Alone Administrative Support Systems

3.1.1.7.1 Person-Month Utilization System (PMU)

The Person Month Utilization System was developed by the SSM contractor as a custom, stand-alone application in the PDP 11 PROCOL environment. Since the performance of the existing system is satisfactory, the redevelopment of the PMU system would be based exclusively on an eventual upgrade of the TDC hardware and software environment.

Rank: Mandatory.

Objective: Provide the TDC Administrative Services with an on-line capability to maintain information related to TDC Personnel Authorizations and Utilization, and to compile and produce a variety of reports for TDC and Transport Canada Management.

Functions:

a. On-line maintenance of TDC Annual Person-Year Annual Authorizations and Employee information;

b. On-line maintenance of Person-Month Utilization information; and

c. Production of a variety of detailed and summary reports related to Person-Month Utilization by various categories.

Constraints:

a. The Subsystem must be integrated with the MIS System to share the information related to Employees and Responsibility Centres;

b. The System must provide full security access controls by separate functions; and

c. The user interface must be provided in French and English.

3.1.1.7.2 Library Mailing List System (MLS)

The Library Mailing List System was initially developed by the SSM contractor as a custom application in the PDP 11 PROCOL environment. Because of certain functional deficiencies and poor performance, the application was eventually redeveloped and implemented in the present IBM PC/XT hardware, and the PC DOS Informix environment. In addition to the Informix Relational database and 4 GL tools, the application makes extensive use of the C language for printing of multiple mailing tickets across the printer page.

Whereas the functionality of the present application system is fully satisfactory, the performance of complex mailing address searches by multiple criteria is still a problem, due to the speed of the old PC/XT processor, and the slow hard disk drive (4.77 MHz clock rate, and 90 msec average access time respectively).

To fully meet the performance requirements, the system would have to be upgraded to an IBM PC/AT and a larger, faster disk drive. As well, an eventual upgrade to the SQL Version of Informix and a possible reduction of the use of C language would be desirable, in order to make the application fully maintainable by the Regional Informatics Unit resources.

Rank: Mandatory.

Objective: To upgrade the existing MLS as follows:

a. Upgrade the existing IBM PC/XT and hard disk to an IBM PC/AT or compatible 8 - 10 MHz processor, and a 40 Mhz, 30 msec disk drive to improve the response time of complex address searches;

b. Convert the application to the SQL Version of Informix, and eliminate most the C Language code to make the System maintainable on a long-term basis by the Regional Informatics Unit, Dorval; Functions:a.Insert, modify, delete and display of Mailing Address information;

Functions:

a. On-line maintenance (insert, modify, delete and inquire functions) of the Mailing Addresses and classification codes related to geographic areas and areas of interest;

b. Production of mailing labels selected by a combination of geographical area and area of interest criteria in French, English and bilingual formats; and

c. Production on demand of mailing lists based on various selection criteria.

Constraints: a. The Regional Informatics Unit in Dorval should evaluate the feasibility of the conversion to ensure that most of the C Language code can be eliminated.

b. The PC keyboard and printer hardware, as well as Informix and application software must support French and English character sets.

3.1.1.7.3 Library Acquisition System (LAS)

The Library Acquisition System was also initially developed by SSM as a custom application in the PDP 11 PROCOL environment. Due to the performance bottleneck in the PDP 11/44 environment, the system was eventually converted to the PC DOS Informix and C Language software environment, and is presently supported by the same IBM PC/XT hardware as the Mailing List System.

The present application provides adequate functionality for acquisition of books and abstracts, however, it does not cover the acquisition, and tracking of receipt of periodicals on an exception basis.

Rank: Mandatory.

Objective: To upgrade the existing Library Acquisition System as follows:

a. Upgrade the application system to handle the Acquisition and Monitoring of Periodicals;

b. Upgrade the existing IBM PC/XT hardware to IBM PC/AT or compatible processor, and a faster disk drive to improve the performance, and at least 40 Mbytes capacity to the storage space for the Periodicals.

c. Convert the application from the present non-SQL Informix to the SQL version of Informix, and eliminate most of the C Language code to make the System maintainable on a long-term basis by the Regional Informatics Unit, Dorval.

Functions:

a. On-line maintenance of the Vendor and Subscription tables (insert, modify, delete and inquiry functions);

b. On-line maintenance of periodicals receipts by exception;

c. Production exception reports and claim letters related to receipt of periodicals;

Constraints: The Regional Informatics Unit in Dorval should evaluate the technical feasibility of conversion to Informix SQL, to ensure that most of the C Language code can be eliminated.

3.1.1.7.4 TDC Purchasing and Inventory System

Rank: Mandatory.

Objective: To provide the TDC Administrative Support Services with a local on-line, integrated Purchasing and Inventory System which will include a required subset of capabilities presently provided by the Transport Canada's Material Management System.

Functions:

a. On-line maintenance of Vendor and Purchase Order information for goods and services (insert, modify, delete, and display functions);

b. On-line printing of Purchase Orders on pre-printed computer forms;

c. On-line maintenance of the Receipts, Issues, Inventory Balances, Location and Disposal information related to capital and non-capital acquisitions;

d. On-line maintenance of Accounts Payable Invoice information related to purchase of goods and services;

e. Compilation and production of various reports related to purchases, receipts, inventory, financial commitments and expenditures, and location and value of capital assets; and

f. Batch interface with the General Ledger System.

Constraints: The System must meet the following constraints:

a. Provide an integrated Purchasing and Inventory System, and a batch interface to the General Ledger to eliminate duplication of data entry activity;

b. Comply with all applicable accounting procedures and standards;

c. The user interface must bilingual, French and English; and

d. The Regional Informatics Unit should investigate the existence of packages or in-house developed systems which could be modified to meet the TDC functional requirements.

3.1.1.8 Integration of the Desktop Publishing System

The existing, leased Interleaf Desktop Publishing System provides the capability for integration with the future TDC Office Automation Systems and Transport Canada Network (TCN) via an Ethernet Local Area Network Interface.

Rank: Mandatory.

Objective: To integrate the existing Unix based, Interleaf Desktop Publishing System with the proposed TDC Management Information System (MIS) and Office Automation Environment, and provide a gateway to the Transport Canada Network (TCN) in a most appropriate network configuration.

Functions: The proposed network solution must provide the following functions:

a. Uploading of text and graphics data files from the Interleaf system to the MIS system for archiving and mass storage, and downloading of data files for routine processing;

b. Exchange of data files with the TDC Office Automation environment and sharing of TDC local area network peripherals;

c. Exchange of data files with the compatible publishing systems, and access of specialized peripherals, TCN-wide.

Constraints: The proposed network solution must meet the following constraints:

a. The proposed TDC gateway must be compatible with the Interleaf supported Ethernet local area network standard;

b. Exchange of large graphic data files must not degrade the performance of the MIS and related systems below the specified performance requirements;

3.1.1.9 Office Automation Systems

The largest part of the present workload of the Project Officers, Division Chiefs, Modal Coordinators, and Secretaries consists of preparing, typing, editing and proof reading, routing for review and approval, tracking the status, and filing activities associated with the documents related to the TDC R&D Project Procedures as presently documented in the TDC Project Procedures Manual and related documents.

The TDC Staff taking part in these activities also constitute the largest group of the MIS users at TDC, as well as the largest part of the present TDC staff.

The present level of automation in this area is minimal, consisting of stand-alone, non-integrated:

a. Single user AES Word Processor in Administrative Support Area;

b. Two IBM PC/XTs available for the general use by the project Officers and Chiefs' Secretaries;

c. Ten IBM PC/XT/ATs used as personal productivity tools by the Chiefs and Senior Development Officers.

The present PDP 11/44 MIS environment does not support connection of personal computers as MIS devices, thus requiring both a VT or compatible CRT terminal and a personal computer in the offices of the Executive Director and Division Chiefs, thus causing duplication of hardware on one side, while the Project Officers and Chiefs Secretaries are faced with excessive contention for access to the MIS terminals and personal computers.

To make the optimum use of the future information systems and office automation hardware and information resources will require a standardization and integration of the existing and proposed systems and devices on the basis of a local area network as part of the Transport Canada Network, and introduction and implementation of the appropriate Office Automation Systems in Phase II of the TDC Computer Systems and Office Automation Project.

Rank: Mandatory, Phase II.

Objectives: The following outlines the major TDC Office Automation Systems objectives:

a. To integrate the existing and future management information systems and office automation systems and devices into a TDC Local Area Network based on the most appropriate technology, and provide a gateway to the Transport Canada Network (TCN) via compatible hardware, software and application technologies;

   This will require upgrading of the existing IBM PC/AT and compatible microcomputers with the required LAN hardware and software, and consistent implementation of the Department's standards to all future acquisitions of TDC information systems and office automation hardware and software.

b. To implement a set of Office Automation application software packages meeting the specific needs of the TDC users, and providing full compatibility with the Department's SNA communication network standards and DISOSS Document Distribution Services.

c. To automate the document processing functions related to TDC's R&D Project Procedures on the basis of the existing TDC Project Procedures Manual, and the TDC LAN and TCN Networks and Office Automation Software Packages.

Functions: The following summarizes the main TDC Office Automation Systems functions based on the existing Project Procedures Manual and related documents:

a. Raising, review, revision and approval of documents related to the R&D Project Definition, Approval, and Contracting Phases;

b. Routing for distribution and update of documents related to the R&D Project Definition, Approval and Contracting Phases;

c. Tracking of the status of documents related to the R&D Project Definition, Approval and Contracting Phases;

d. Electronic filing and retrieval of documents related to the R&D Projects and Procedures;

e. Managing the user workload on the basis of the document priority and arrival sequence by all TDC Office Automation Systems users;

f. Raising, distribution, and tracking of status of all other authorized messages and correspondence Department-wide;

g. Access to, and use of all other authorized systems, peripherals and services Department and TCN wide.

Constraints: The following summarizes the major constraints related to the Office Automation Systems and Applications:

a. All future devices, software, and applications must meet the applicable Department's standard to ensure their full compatibility with the TCN;

b. The TDC Local Area Network systems must be managed by a combination of the TDC and TCN staff to ensure their optimum performance and use, and enforce the required Department's access and data security standards;

c. The TDC users of the TDC LAN and TCN systems and services must be adequately trained and supported to ensure the optimum use of Department's resources.

3.1.2 Data Elements and Relationships

Due to the large number of the existing TDC Management Information Systems and the relative importance and priority of the present MIS, we are only providing the entities and relationships diagrams for the MIS, G/L and related systems. The data elements for the existing Systems are provided in Appendix C in the form of the existing file layouts and descriptions of fields where available. The detailed data model for the proposed Systems should be provided in the Detailed Functional Analysis Phase of the project which normally follows the Feasibility Study Phase.

3.1.2.1 Management Information System (MIS)

For ease of presentation and understanding, the data entities and relationships are presented separately for the Financial, and the Project Management and related subsystems. The subject is presented in terms of tables listing and describing the main data entities, and the entity relationship diagrams showing the relationships between the main data entities.

3.1.2.1.1 Financial Subsystem Database

Table 3.1 provides a list of data entities and descriptions of the information content, while Figure 3.3 shows the Entity Relationship Diagram of the MIS Financial Subsystem.

3.1.2.1.2 Project Management Subsystem Database

Table 3.2 provides a list of data entities and descriptions of their information content, and Figure 3.4 shows the Entity Relationship Diagram of the Project Management Subsystem.

3.1.2.1.3 Other Databases

Since the databases of the existing stand-alone Administrative Support Systems are relatively trivial, they are not dealt with here.

Table 3.1 MIS Financial Subsystem Data Entities

Entity Name	Description
RESPONSIBILITY CENTRE	Contains TDC Responsibility Centre Codes and Descriptions.
G/L ACCOUNT	Defines the Chart of Accounts based on the Transport Canada Coding Structure, and contains information on Budgets and Summary Actuals.
G/L TRANSACTION	Contains G/L Transactions from Journal Entry and related system interfaces.
SPONSOR TYPE	Contains Funding Sponsor Type Codes and Descriptions.
FUNDING SPONSOR	Contains information related to Funding Sponsors, including Sponsor Code, Type, Name, and Address.
FUNDING CONTRACT	Contains Funding Contract information and related cross-reference codes.
CONTRACT TIES	Contains information on individual Contract Ties.
CONTRACT TRANSACTION	Contains information on Invoices to, and Payments from the Funding Sponsors.
PROJECT TRANSACTION	Contains information on Invoices from, and Payments to the Performing Organizations.
PAYROLL EMPLOYEE	Contains the information on TDC term and indeterminate employees and related Payroll information.
EMPLOYEE PAY	Contains the Payroll Transactions and Expenses information related to TDC term and indeterminate employees.
CONFERENCE	Contains information related to authorized Conferences.
CONFERENCE	Contains information related to Conference
EXPENSES	Expenses.

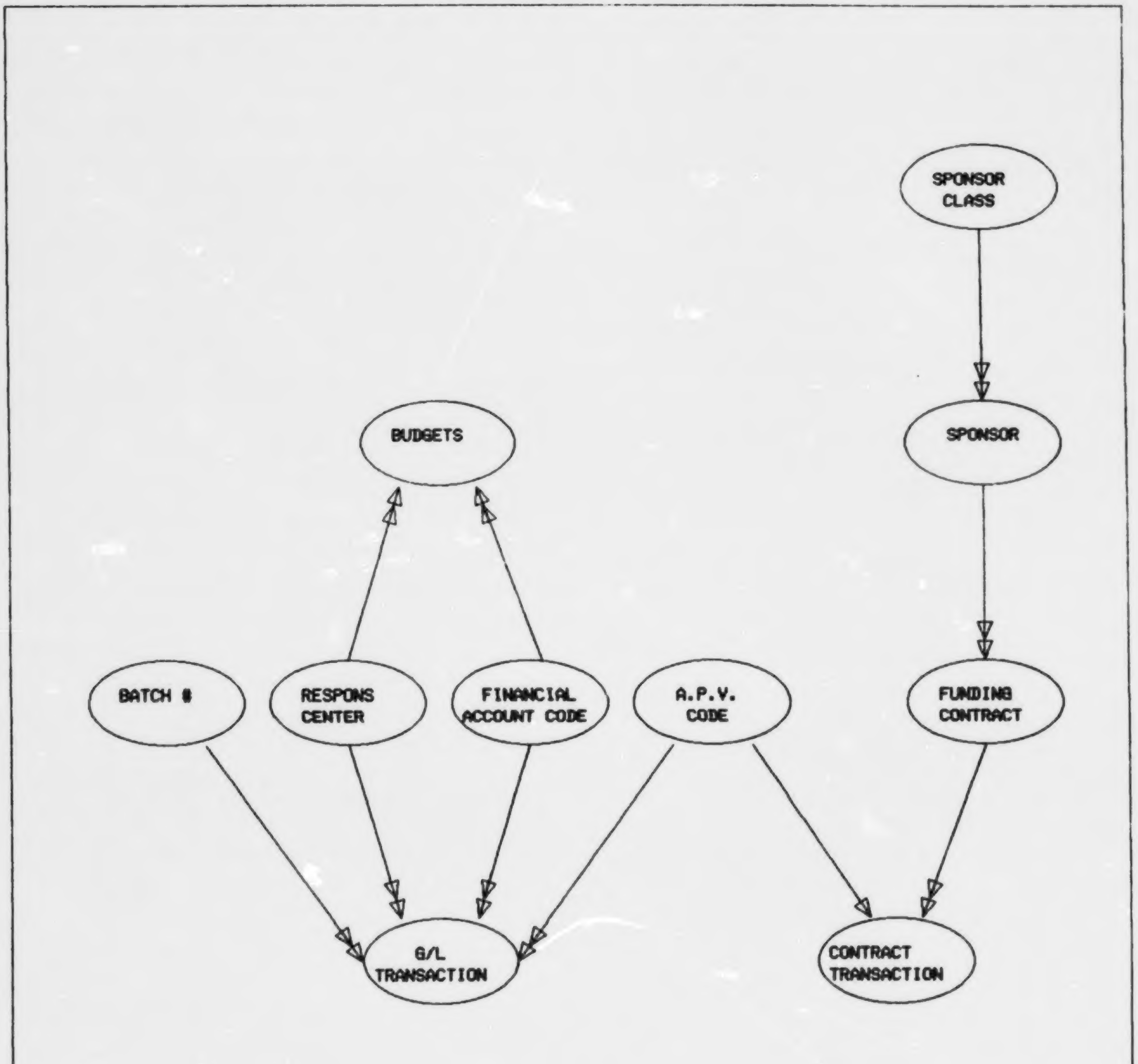

SPONSOR CLASS
BUDGETS
SPONSOR
BATCH #
RESPONS CENTER
FINANCIAL ACCOUNT CODE
A.P.V. CODE
FUNDING CONTRACT
G/L TRANSACTION
CONTRACT TRANSACTION

FIG 3.3 MIS FINANCIAL SUBSYSTEM ENTITIES/RELATIONSHIPS

Table 3.2 MIS Project Management Subsystem Data Entities

Entity Name	Description
PROJECT OFFICER	Contains the name and other information related to TDC Project Officers.
TRANSPORTATION MODE	Contains Transportation Mode Codes and Descriptions.
MODAL OBJECTIVES/ SUBOBJECTIVES	Contains Modal Objective/Subobjective Codes, Descriptions and Budgets.
SCIENCE ADDENDUM	Contains Science Addendum Codes and Descriptions.
PROPOSED PROJECT	Contains textual, budgetary and source information related to R&D Project Proposals
R&D PROJECT	Contains R&D Project related information, and classification and cross-reference codes.
PROJECT SCHEDULE	Contains monthly Planned and Actual Project Schedule information.
PROJECT PUBLICATION	Contains information related to the Publication Description, Status and Inventory.
LOCATION	Contains Codes and Descriptions of the Publication Inventory Locations.
INVENTORY/LOCATION	Contains information on the Publications Inventory Information by Location.
PROJECT EQUIPMENT	Contains information related to R&D Project Equipment, Status and Location.

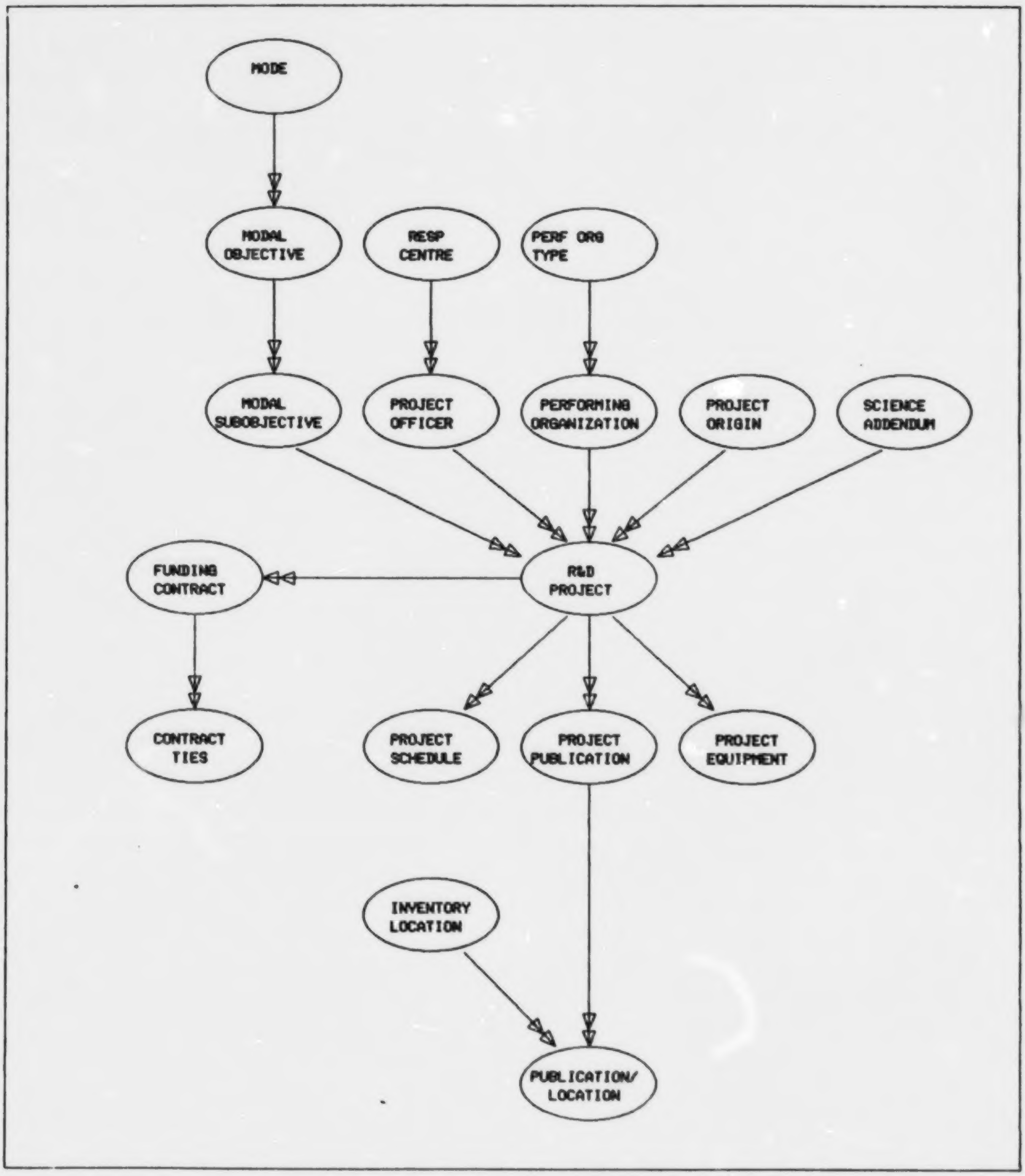

MODE
MODAL OBJECTIVE
RESP CENTRE
PERF ORG TYPE
MODAL SUBOBJECTIVE
PROJECT OFFICER
PERFORMING ORGANIZATION
PROJECT ORIGIN
SCIENCE ADDENDUM
FUNDING CONTRACT
R&D PROJECT
CONTRACT TIES
PROJECT SCHEDULE
PROJECT PUBLICATION
PROJECT EQUIPMENT
INVENTORY LOCATION
PUBLICATION/ LOCATION

FIG 3.4 PROJECT MANAGEMENT SUBSYSTEM ENTITIES/RELATIONSHIPS

3.1.3 System Inputs

The system inputs for the MIS and Administrative Support Systems are defined here in terms of:

- design and technical standards applicable to the on-line menu system and formatted input screens; and
- system inputs as on-line data maintenance functions consisting of insert, modify, delete and display functions via formatted screens.

3.1.3.1 Design and Technical Standards

Menu System Standards

The following menu standards should be implemented for all redesigned or upgraded Systems:

- all system functions should be accessible via a complete, hierarchically structured, master system menu, and via customized sets of menus by users;
- the menus must be based on sets of logically grouped system functions, clearly separating and designating data maintenance screens, batch procedures, and reports;
- each menu item must provide the reference number or code of the corresponding submenu or screen format, or report;
- each menu or submenu must be sufficiently well described in the header information to make clear the purpose and function of the menu;
- each menu item must be sufficiently descriptive to clearly convey the purpose and effect of the functions (the size of the menus should normally be restricted to 10 - 15 items per menu); and
- each menu must provide an on-line help screen explaining the purpose and effect of all menu options.

Data Maintenance Screen Standards

The following data maintenance screen standards should be implemented for all redesigned or upgraded Systems:

- the heading of each screen format must provide the program/screen format reference number or code, and descriptive information with respect to the screen format function;

- the data maintenance screens must be structured on the basis of logical blocks, where one block is related to exactly one database table;

- insert, modify, delete and display functions must be provided for each database table;

- the modify and delete operations must take into account all constraints imposed by the system logic, and the accounting procedures and standards, where applicable;

- where the update or modify operations are constrained to a subset of fields, they must be based on separate screens which clearly highlight only the data items which can be modified by the specific operation (to separate them from display only items which can not be modified);

- each data maintenance screen must provide on-line help information defining the purpose and description of the operation, and the database tables and data items it affects, as well as any data constraints;

- database roll-back must be implemented for each logical data maintenance transaction which will back out all incomplete transaction data in the event of system or program failure, or in case the Operator aborts a transaction; and

- all data maintenance operations must provide a printed audit trail of all operations on a session basis, as well as a full stored audit trail of all changes to the database providing the "before and after" image information, and indicating clearly who effected what changes, when and from where.

NOTE: Many tables may require more than one update transaction related to specific data maintenance responsibilities and authorizations. These specific transactions will be defined in the Detailed Functional Analysis Phase of the Project on the basis of the TDC Operational and Financial Services Procedures and related documents.

3.1.3.2 MIS System Inputs

3.1.3.2.1 MIS Financial System Inputs

1. General Ledger System Maintenance

    a. Insert, delete, modify and display the Responsibility Centre Table entry;

    b. Insert, delete, modify and display the G/L Account Table entry;

    c. Insert, modify, delete and display the G/L Budget Table entry;

    d. Insert, delete, modify and display the G/L Transaction Table entry; and

    e. Post G/L Transactions from batch interface files of other Subsystems.

2. Contract Management Subsystem Maintenance

    a. Insert, delete, modify and display the Sponsor Type Table entry;

    b. Insert, delete, modify and display the Funding Sponsor Table entry;

    c. Insert, delete, modify and display the Funding Contract Table entry;

    d. Insert, delete, modify and display the Contract Tie Table entry;

    e. Insert, delete, modify and display the Funding Sponsor Invoice/Payment Transaction Table entry;

    f. Insert, delete, modify and display the Performing Organism Invoice/Payment Transaction Table entry;

    g. Post to the General Ledger System the Funding Sponsor Transactions; and

    h. Post to the General Ledger System the Performing Organism Transactions.

3. Payroll Subsystem Maintenance

   a. Insert, delete, modify and display the TDC term and indeterminate Employee Table entry;

   b. Insert, delete, modify and display the TDC term and indeterminate Employee Payroll Table entry; and

   c. Post to the General Ledger System the Payroll Transactions.

4. Conference Subsystem Maintenance

   a. Insert, delete, modify and display the Conference Table entry;

   b. Insert, delete, modify and display the Conference Expense Table entry; and

   c. Post to the General Ledger System the Conference Expense Transactions.

3.1.3.2.2 MIS Project Management Subsystem Inputs

1. TDC Annual Operational Plan Maintenance

   a. Insert, modify, delete, and display the Transportation Mode Table entry; and

   b. Insert, modify, delete, and display the Modal Objective and Subobjective Table entry.

2. Proposed Projects Maintenance

   Insert, modify, delete, and display the Proposed Projects Table entry.

3. Project Management Subsystem Maintenance

   a. Insert, delete, modify and display the Project Officer Table entry;

   b. Insert, delete, modify and display the Science Addendum Table entry;

c. Insert, delete, modify and display the DSS Requisition Table entry;

d. Insert, delete, modify and display the Performing Organism Type Table entry;

e. Insert, delete, modify and display the Performing Organism Table entry;

f. Insert, delete, modify and display the Project Table entry;

g. Insert, delete, modify and display the Project Schedule Table entry; and

h. Insert, delete, modify and display the Project Equipment Table entry.

4. Publications Management System Maintenance

a. Insert, delete, modify and display the Project Publication Table entry;

b. Insert, delete, modify and display the Publication Location Table entry; and

c. Insert, delete, modify and display the Publication by Location Table entry;

3.1.3.3 Person-Month Utilization System Maintenance

a. Insert, delete, modify and display the TDC Employee/Person-Year Authorization Table entry; and

b. Insert, delete, modify and display the Person-Month Utilization Table entry.

3.1.3.4 Purchasing System Maintenance

a. Insert, delete, modify and display the Vendor Table entry;

b. Insert, delete, modify and display the Purchase Order Header Table entry;

c. Insert, delete, modify and display the Purchase Order Line Item Table entry;

d. Insert, delete, modify and display the Purchase Receipt Table entry;

e. Insert, delete, modify and display the Vendor Invoice Table entry;

f. Insert, delete, modify and display the Inventory Location Table entry; and

g. Insert, delete, modify and display the Inventory Transaction Table entry.

3.1.3.5 Mailing List Maintenance

Insert, delete, modify and display the Mailing List Address Table entry.

3.1.3.6 Library Acquisition System Maintenance

a. Insert, delete, modify and display the Publisher (Vendor) Table entry;

b. Insert, delete, modify and display the Order Header Table entry;

c. Insert, delete, modify and display the Order Line Item Table entry;

d. Insert, delete, modify and display the Receipts Table entry; and

e. Insert, delete, modify and display the Invoice Table entry;

3.1.3.6.1 Periodicals Subscription Subsystem

a. Insert, delete, modify and display the Periodical Subscription Table entry; and

b. Insert, delete, modify and display the Periodical Receipts Table entry (on an exception basis).

3.1.4 System Outputs

The system outputs are defined here in terms of:

- design and technical standards applicable to report selection screens and report output formats;
- references to the existing system outputs defined in Section 2, and the corresponding sample reports in Appendix A.

3.1.4.1 Design and Technical Standards

The following Standards should be implemented for each on-line report selection screen:

- a report selection screen format must be provided for every report which implies any report selection parameters;
- each selection screen should provide clearly defined selection fields to restrict the selection of report data to specific areas of interest; the selection data should be printed after the report header;
- in addition to any selection criteria, each report should provide for selection of the output device and number of copies; and
- on-line help screens must be provided for every report selection menu, explaining the purpose and context of the report; meaning of each column of data presented; and explanation of report options and selection parameters.

The following Report Format Standard should be applied to every report output:

a. The report headings must include the following information:

   - the report program reference number which must also appear on each menu selection option, and system date, when compiled and produced;
   - sufficiently descriptive report heading to clearly convey to the end-users the context and meaning of the report; and

  - any selection criteria applied for this particular instance of the report;

b. Report column headings of the database columns must be based on standard column headings defined and maintained in the system data dictionary;

c. Report column headings of computed columns must be sufficiently descriptive to clearly convey the meaning of information presented.

3.1.4.2 Management Information System (MIS)

3.1.4.2.1 TDC Annual Operational Plan Subsystem Outputs

a. List of the Transportation Mode Table Entries;

b. List of the Modal Objective/Subobjective Table Entries;

c. Operational Plan Modal Summary Report (sample reports 1.1 and 1.2);

e. Operational Plan Overall Summary Report (sample report 1.3); and

f. Operational Plan Detailed Review (sample report 1.4).

3.1.4.2.2 Proposed Projects Subsystem Outputs

a. TDC Proposed Projects Reports by Responsibility Centre, and by Transportation Mode (sample report 2.1) .

3.1.4.2.3 MIS Financial Subsystem Outputs

1. Master File Reports

   a. List of Responsibility Centres;

   b. Chart of Financial Accounts Listing;

   c. List of Funding Sponsor Types;

   d. List of Funding Sponsors;

e. Mailing Address Tickets of Performing Organizations (sample report 3.1.1); and

f. List of Performing Organizations (sample report 3.1.2).

2. General Ledger Reports

2.1 G/L Budget Reports

a. List of G/L Accounts by Responsibility Centre, Line Object, Budget Code, and Allotment Code (sample report 4.2.10);

b. G/L Budget Inquiry (screen format BF02 in Appendix A, Section 4.1);

c. New Budgets Summary Report by Responsibility Centre (sample report 3.7.6); and

d. New Budgets Summary Report by Transportation Mode (sample report 3.7.7); and

e. Monthly Budget Extension Detailed Report by Responsibility Centre and Budget Code (sample report 4.1.1).

2.2 G/L Transaction Reports

a. General Ledger Transaction Report by Responsibility Centre and Line Object (sample report 4.2.2);

b. G/L Adjustment Transaction Report (sample report 4.2.4);

c. G/L Transaction Register by Batch # and Line Object (sample report 4.2.5);

d. G/L Transaction Register by Responsibility Centre and Line Object as of Specific Date (sample report 4.2.6);

e. Report of Salary Advances by Responsibility Centre and Line Object (sample report 4.2.1);

f. Mileage Report by Line Object, Responsibility Centre, A.P.V. Codes and the Claimant (sample report 4.2.9); and

g. Report of Travel Advances by Responsibility Centre, Line Object, Date Issued, A.P.V. Code and Beneficiary (sample report 4.2.11).

2.3 G/L Expenditures Reports

a. Monthly Extension Summary Report by Responsibility Centre and Allotment Code (sample report 4.1.2);

b. List of M-T-D Actuals by Line Object and Responsibility Centre (sample report 4.2.3);

c. M-T-D / Y-T-D Summary of Actual Expenditures by Responsibility Centre, Major Line Object Code, and Full Line Object Code (sample report 4.2.8);

d. Status Report of Budgets and Expenditures by Responsibility Centre and Line Object (sample report 4.2.13);

e. Y-T-D Report of Actual Expenditures by Allotment Code (sample report 4.2.7)

f. Y-T-D Financial Performance Report of Expenditures, Commitments and Variances, and Forecast of Expenditures to End of FY by Type of Expenditure/Allotment Code (sample report 4.3.1); and

g. Final Variance Report of Budgets, Expenditures, Commitments and Forecasts by Line Object (sample report 4.3.4).

2.4 Budget vs. Actuals Reports

a. Budget Amendment Report of Budgets, M-T-D/Y-T-D Actuals and Balances by Responsibility Centre, Budget Code and Fiscal Month (sample report 4.4.1);

b. Comparative Budget vs. Actual Report by Allotment Code (sample report 4.3);

c. Report of Budgets, Expenditures, Balances and Variances by Allotment Code (sample report 4.2.12);

d. Report of Budgets and Expenditures by Allotment Code and Fiscal Month (sample report 4.3.2); and

e. Variance Report of Budgets, Expenditures, Commitments and Forecasts by Line Object (sample report 4.3.3).

2.5 Payroll Subsystem Reports

a. Detailed Pay Report by Responsibility Centre, Line Object, and Employee (sample report 4.5.1).

2.6 Conference Expense Reports Menu

a. Report of Conference Allocations, Expenses and Balances by Expenditure Date, A.P.V. Code, Conference Date and Beneficiary (sample report 4.6.1); and

b. Monthly Report of Conference Expenses by Conference Type, Title and Type of Expenses (sample report 4.6.2).

3. MIS Funding Contract Reports

3.1 MIS Reports Menu

a. Summary/Detailed Report of R&D Project Ties (Tasks) Related To A Funding Contract providing:

- Summary Report of Tasks related to a Funding Contract (sample report 3.1.3); and

- Detailed Report of Expenditures for each Task related to a Funding Contract (sample report 3.1.4).

b. Funding Contract Transaction Report (sample report 3.1.5);

c. List of Payables At Year End (PAYE), Active and Completed (sample report 3.1.6); and

d. List of Payables At Year End (PAYE), Active Only (sample report 3.1.7).

3.2 Finance Manager's Reports Menu

a. Statement of Professional and Special Services Over $ 50,000 (sample report 3.2.1);

b. List of Funding Contracts by Project Officer (sample report 3.2.2); and

c Annual Expenditure Report (sample report 3.2.3); and

d. List of Funding Sponsor Records in A-I-P and Negotiation Status providing:

  - Positive Sponsor Funding Contract Records (sample report 3.2.4); and

  - Negative Sponsor Funding Contract Records (sample report 3.2.5).

3.3 MIS Status Reports Menu

a. List of Funding Contracts Exceeding Annual Budget (sample report 3.4.1);

b. Status Report (sample report 3.4.2);

c. Status Report Without Remarks (sample report 3.4.3); and

d. Status Report Without Remarks (sample report not provided).

3.4 Funding Contracts Recuperation Reports

a. Funding Contract Monthly Recuperation Reports providing:

  - Recuperation Report of Measures Taken (sample report 3.6.1); and

  - List of Negative Funding Contracts (sample report 3.6.2).

3.5 End of Month Reports

a. Master Card Report For One Funding Contract (sample report 3.7.1);

b. Master Card Report For All TDC Funding Contracts (sample report 3.7.2);

c. Master Card Report For One R&D Project by Month (sample report 3.7.3); and

d. List of Funding Contracts by Mode and Funding Sponsor (sample report 3.7.5).

3.6 End of Month Reconciliation Reports Print

a. The Recuperation Report of Measures Taken (sample report 3.6.1);

b. List of Negative Funding Contracts (sample report 3.6.2);

c. Project Profile Sheet Reports for all TDC R&D Projects (sample report 3.13.1);

d. R&D Project Status Reports For All Active Projects (sample report 3.4.2);

e. List of Funding Contracts Exceeding The Annual Budget (sample report 3.4.1);

f. TDC Disabled and Elderly Research Projects (sample report 3.3.1);

g. TDC R&D Projects Listing by Sponsoring Agency (sample report 3.7.8);

h. Budget Master Card Balance Sheet (sample report 3.7.9);

i. Active Contracts and Contributions Report by Responsibility Centre (sample report 3.7.10);

j. Completed Contracts and Contributions by Responsibility Centre (sample report 3.7.11);

k. TDC Project Listing by Sponsoring Agency Authorized for Responsibility Centre (sample report 3.7.12);

l. Verification and Reconciliation of Project Retenues (sample report 3.7.13);

m. Monthly Reconciliation Report of Contract Expenditures - "DSS Batch" Monthly Listing (sample report 3.7.14); and

n. Monthly Reconciliation Report of Contract Expenditures - "G/L Monthly Totals" (sample report 3.7.15).

3.7 MENU pour FORTIN Reports

a. Funding Contract Status Listing (sample report 3.8.1); and

b. Record of Consulting and Professional Services Forms Report (sample report 3.8.2).

4. Requisition and Invoice Maintenance Reports

4.1 Requisition and Invoice Maintenance Menu

a. Invoice Inquiry (screen format 3.11.1);

b. Requisition Inquiry (screen format 3.11.2); and

c. Funding Contract Number Inquiry by Requisition Number (sample report 3.11.3).

4.2 Requisition and Invoice Reports Menu

a. Follow-up Reports (1) on:

  - Late Claims for Progress Payment Report by Project Officer (sample report 3.12.1); and
  - Late Claims for Progress Payment Report for All Projects (sample report 3.12.2).

b. List of Late Requisitions (sample report 3.12.3);

c. Follow-up Reports on:

  - Late Requisitions Report by Responsibility Centre (sample report 3.12.4); and

  - Late Agreements/Service Contracts Report by Responsibility Centre (sample report 3.12.5).

d. List of Funding Agreements (sample report not provided);

e. List of Late Telexes (sample report not provided);

f. List of Invoices Sent to DSS (sample report 3.12.6);

g. List of Invoices Received (sample report not provided);

h. List of Requisitions Sent to DSS (sample report not provided);

i. List of Contracts/Agreements Received (sample report not provided);

j. List of Invoices Sent To-Date (sample report not provided);

k. List of Invoices for Cancellation (sample report not provided);

l. List of Requisitions for Cancellation (sample report not provided);

m. List of Payables At Year-End (PAYE), (sample report 3.12.7); and

n. List of Transactions in Pre-Invoice for Cancellation (sample report 3.12.8).

3.1.4.2.4 MIS Project Management Subsystem Outputs

1. Project Officers' Reports

1.1 Project Narrative Reports

a. Project Profile Sheet (sample report 3.5.1).

1.2 Project Officers' Reports

a. Project Profile Sheet for One Project, All Projects, or One Mode (sample report 3.13.1);

b. Funding Contract Transactions for One Funding Contract, for One Project Officer, for One Funding Sponsor, or for One Responsibility Centre (sample report 3.13.2);

c. List Of Funding Contracts for one Sponsor by Responsibility Codes (sample report 3.13.3);

d. List of Projects For One Contractor (sample report 3.13.4);

e. List of Funding Contracts For One Central Registry File (sample report 3.13.5);

f. List of Contractors For One Project Officer (sample report 3.13.6);

g. List of Proposed Projects for One Project Officer, One Responsibility Centre, or one Mode (sample report 3.13.7);

h. MIS Project Entry Form for Retroactive Entry (sample report 3.13.8) and Data Entry Feedback Form (sample report 3.13.9);

h. List of Bridge Funded Contracts by Responsibility Centre (sample report 3.13.10);

i. List of Funding Contracts for One Project Officer (sample report 3.13.11); and

j. Financial Status Report for One Funding Contract (sample report 3.13.12).

2. Special Chiefs' Reports

2.1 TDC Disabled and Elderly Research Projects Reports

a. List of Disabled and Elderly Research Projects (sample report 3.3.1).

2.2 Reports for Chief of Special Projects

a. Report on Projects for Site Visit (sample report 3.17.1);

b. Contract Ties Information Report (sample report 3.17.2); and

c. Project Reports for EIA Survey, including:

  - Report of Projects Funded by Energy R&D Program, Including Cosponsors (sample report 3.17.3);

  - Report of DSS Fees for Energy R&D Projects (sample report 3.17.4); and

  - Energy R&D Project Report by Program Elements (sample report 3.17.5).

2.3 Reports Menu for Chief of Technology Applications

a. List of Funding Contracts for Technology Applications by Project Officer (sample report 3.18.1); and

b. List of R&D Projects by Project Officer (sample report 3.18.2).

3. Modal Coordinator' Reports

3.1 Modal Coordinators Reports

a. Specific Project Information Report (sample report 3.14.1);

b. Three Year Modal Plan Report (sample report 3.14.2);

c. General Program Information Report (sample report 3.14.3);

d. Energy Conservation Project Information Report (sample report 3.14.4);

e. Energy Conservation Program Report (sample report 3.14.5);

f. Liquid Fuels Plan (sample report 3.14.6);

g. Energy Conservation and Liquid Fuels Plan by Project Officer (sample report 3.14.7); and

h. Two Year Modal Plan (sample report 3.14.8).

3.2 Energy Program Reports

a. Consolidated Energy Program Financial Status Report (sample report 3.9.1);

b. Energy Program Financial Status Report by Program (sample report 3.9.2);

c. Funds Recuperation Report by Program (sample report 3.9.3); and

d. Consolidated Funds Recuperation Report For All Programs (sample report not provided).

4. Management Reports

4.1 EDTDC Reports

a. Projects In A-I-P Status Report (sample report 3.15.1);

b. R&D Expenditures Report by Performing Organization Type (sample report 3.15.2);

c. R&D Expenditures Report by Geographical Regions (sample report 3.15.3);

d. R&D Expenditures Report for one Contractor (sample report 3.15.4);

e. Funding Contracts In Negotiation Status (sample report 3.15.5);

f. Details of Ties For One Funding Contract (sample report 3.15.6);

g. R&D Report, Budgetary Summary by Project Officer (sample report 3.15.7);

h. Detailed R&D Report, Funding Contracts by Project Officer (sample report 3.15.8);

i. Report of Current Year Outstanding Invoices (sample report not provided);

j. Project Financial Status Report (sample report 3.15.10);

k. Report of Projects In Reporting Status (sample report 3.15.11); and

l. Report of Funding Contracts Older Than One Year (sample report 3.15.12).

4.2 DGRD Reports

a. Contractor Information Report For One Contractor (sample report 3.16.1);

b. Project Financial Status Report (sample report 3.16.2);

c. List of Funding Contracts by Modal Category (sample report 3.16.3); and

d. Reports of Specific R&D Programs:

  - Report of Specific R&D Programs by Sponsors (sample report 3.16.4);
  - Energy Conservation & Liquid Fuels Report by Sponsors (sample report 3.16.5);
  - Elderly and Handicapped Program (sample report 3.16.6);
  - New Proposed Projects Report (sample report 3.16.7);
  - Transportation Program Status Report (sample report 3.16.8); and
  - List of R&D Projects Wholly or Partially Funded By Energy Sponsors (sample report 3.16.9).

3.1.4.2.5 Project Completion Phase Outputs

a. Form Letter Related To Draft Report, English (sample letter form 3.19.1);

b. Form Letter Related To Draft Report, French (sample letter form 3.19.2);

c. Mailing List Request Form, English (sample form 3.19.3);

d. Mailing List Request Form, French (sample form 3.19.4);

e. Report Information Form, English (sample form 3.19.5);

f. Report Information Form, French (sample form 3.19.6);

g. Project Completion Letter Form, English (sample letter form 3.19.7); and

h. Project Completion Letter Form, French (sample letter form 3.19.8).

3.1.4.2.6 Publication Management Subsystem Outputs

1. SGP Inquiries

   a. Publication Status Inquiry by Transport Publication Number (TP #, screen format 3.20.1);

   b. List Of Publications by Project Officer's Name (sample report not provided);

   c. List Of Publications by Performing Organism/ Publisher (sample report not provided);

   d. List Of Publications by Subject Keyword Within Title (sample report not provided); and

   e. Publication Status Inquiry by Funding Contract # (screen format 3.20.1).

2. Publications Management Reports

   a. Publication Inventory Transaction and Balances List (sample report 3.20.2);

   b. List Of Publications From and Approval Date (sample report 3.20.4);

c. Alphabetic List Of Performing Organizations (sample report 3.20.5);

d. List Of Publication Inventory Sections (sample report 3.20.6);

e. List Of Publications By Transport Publication Number (sample report 3.20.7); and

f. List Of Publications By Title (no sample report).

3.1.4.3 Person-Month Utilization System Outputs

a. List of Undefined Positions (not related to any Responsibility Centre, sample report 5.1);

b. List Of Positions, Employees and Allocations by Employee Type and Responsibility Centre (sample report 5.2);

c. Monthly Distribution Report of Person-Month Utilization and Allocations by Employee Type and Responsibility Centre (sample report 5.3);

d. Monthly Person-Month Utilization Exception Report by Exception Code (3, sample report 5.4);

e. Year-End Forecast Of Person-Month Utilization by Month and Resource Type (sample report 5.5);

f. Report Of Authorized Person-Month Allocations for Fiscal Year by Month and Resource Type (sample report 5.6);

g. Fiscal Year-End Variance Report (Minimum) of Person-Month Utilization vs. Authorized Allocations by Month and Resource Type (sample report 5.7);

h. Monthly Distribution Report of Planned Person-Month Utilization by Month and Resource Type (no data available for sample report);

i. Fiscal Year-End Variance Report (Maximum) of Person-Month Utilization vs. Authorized Allocations by Month and Resource Type (sample report 5.8);

j. List Of TDC Employees by Status for Term and Indeterminate Status (sample report 5.9);

k. List Of TDC Employees by Status for Term, Indeterminate Status and Professional Category (sample report 5.10);

l. Monthly Table Of Person-Month Utilization, Allocations and Forecast by Resource Type and Variances (sample report 5.11);

m. Monthly Person-Year Utilization Table by Position #, Level, Status and Employee (sample report 5.12);

n. Annual Person-Year Utilization Table by Position #, Level, Status and Employee (sample report 5.13);

o. Detailed Monthly Person-Month Utilization Report By Resource and Employee Types (sample report 5.14); and

p. List of TDC Employees By Name (sample report 5.15).

3.1.4.4 TDC Library System Outputs

3.1.4.4.1 Mailing List System Outputs

1. Mailing List Inquiries and Lists

   a. Mailing List Inquiry (screen format 6.1.1);

   b. Mailing Address Inquiry By Usage, Sorted By Company Name (sample report not provided);

   c. Mailing Address Inquiry By Use, Sorted By Postal Code (sample report not provided);

   d. List Of All Addresses, Sorted By Last Name (sample report not provided);

   e. List Of All Addresses, Sorted By Company (sample report not provided);

   f. List Of All Addresses, Sorted By Postal Code (sample report not provided);

   g. List of Addresses For One Or More Usages and One Modal Interest (sample report not provided);

   h. List Of Addresses For One Or More Usages and One Transaction Type (sample report not provided); and

   i. List Of Addresses For Usage/Province, Sorted By Company (sample report not provided).

2. Canadian Mailing Tickets

   a. Print One Mailing Ticket Several Times (sample report not provided);

   b. Print Mailing Tickets For One Usage (sample report not provided);

   c. Print Mailing Tickets For Postal Code & Usage (sample report not provided);

   d. Print Mailing Tickets For One usage & Modal Interest (sample report not provided);

   e. Print Mailing Tickets For One Usage & Transaction Type (sample report not provided);

   f. Print Bilingual Mailing Tickets For Transport Canada, Ottawa (sample report not provided);

   g. Print Mailing Tickets For Transport Canada, French, English (sample report not provided);

   h. Print Bilingual Tickets For Canada without Transport Canada (sample report not provided); and

   i. Print French, English Tickets for Canada Without Transport Canada (sample report not provided).

3. Foreign Mailing Tickets Menu

   a. Print Bilingual Tickets (sample report not provided);

   b. Print French, English Mailing Tickets (sample report not provided);

   c. Print Several Copies Of Mailing Tickets (sample report not provided);

   d. Print Mailing Tickets For One Usage (sample report not provided);

   e. Print Mailing Tickets For One Usage & Modal Interest (sample report not provided); and

   f. Print Mailing Tickets For One Usage & Transaction Type (sample report not provided).

3.1.4.4.2 Library Acquisition System Outputs

a. Purchase Order Print For One Order (sample report 6.2.1);

b. Purchase Order Print For A Batch Of Orders (sample report 6.2.1); and

c. Generate & Print Claim Letters (sample letter not provided).

3.1.4.5 Proposed Purchasing System Outputs

To be defined upon receipt of information from SSM and Regional Informatics Unit, Dorval, who are presently reviewing the requirement.

3.1.5 Interfaces with Other Systems

3.1.5.1 General Ledger Interfaces

The following summarizes the interfaces between the General Ledger System and the proposed MIS and Administrative Support Systems.

1. Management Information System (MIS) Interfaces

   The present manual interface between the MIS and G/L Systems should be automated in order to eliminate the duplication of manual data entry effort. As a minimum, the interface would consist of the following:

   a. Payments to the Performing Organizations;

   b. Payments from the External Funding Sponsors; and

   c. Any Adjustments to (a) and (b) above.

2. Payroll Subsystem Interface To General Ledger

   We propose that the Payroll subsystem interface to General Ledger be implemented as a batch interface, consisting of Payroll Entries and any Adjustments.

3. Conference Subsystem Interface With General Ledger

   We propose that the Conference Subsystem interface to the General Ledger be implemented as a batch interface consisting of Conference Expense Entry Transactions and any Adjustments.

4. Library Acquisition System Interface

   We propose that the Library Acquisition System Interface to General Ledger be implemented as a manual interface consisting of:

   a. Invoices or similar documents received from the Publication vendors, with certification that the materials have been received; and

   b. Any Adjustments related to Claims against (a) above.

5. Proposed Purchasing System Interfaces

We propose that the interface between the proposed Purchasing and Inventory System and General Ledger System initially be implemented as a manual interface consisting of:

a. Purchase Orders and Signed/Costed Maintenance Contracts;

b. Vendor Invoices and Credit/Debit Memos related to vendor Purchase Orders certified for receipt of goods/services; and

c. Any Documents related to disposal of Crown's property.

3.1.6 Data and Processing Volumes

3.1.6.1 Estimated Transaction Volumes

The following Tables summarize the estimated transaction volumes by major systems, based on the transaction volumes data provided by the SSM contractor's staff.

1. MIS Transaction Volumes by Transaction Type

Transaction Type	Annual Volume
New R&D Projects	75
New Funding Contracts	150
Funding Contract Status Updates	1,200
MIS Financial Transactions	2,600
Project Status Updates	5,000
Publications Transactions	1,000
Various Other Transactions	500

Total MIS Transactions	10,525

2. General Ledger Transaction Volumes by Type

Transaction Type	Annual Volume
G/L Budget Maintenance Transactions	720
General Ledger Transactions	5,200
Other Transactions	1,000

Total G/L Transactions	6,920

3. Person-Month Utilization System Transaction Volumes

The following Table summarizes the estimated Person-Month Utilization system transaction volumes:

Transaction Type	Annual Volume
PMU Update Transactions	750

TOTAL TRANSACTIONS PER YEAR	18,195

3.1.6.2 Estimated Data Storage Volumes

The following summarizes the estimated mass storage space requirements based on a 5 Year Capacity Plan, assuming the present level of TDC research and development project activity :

Object Type	Storage Volume (MB)
Operating System Libraries & Work Space	50.0
SQL-Based RDBMS & 4 GL Tools	20.0
SQL Program Production Libraries	20.0
SQL Maintenance Libraries	20.0
Production Data Bases	50.0
Historical Data Bases	50.0
Test Data Bases	20.0
Various User Files (5 years)	100.0
Office Automation Software	10.0
Office Automation Document Files	100.0
Free Space (30%)	120.0

TOTAL REQUIRED MASS STORAGE SPACE	560.0

3.2 PERFORMANCE REQUIREMENTS

The following system performance requirements are based on the TDC need to ensure a productive MIS end user environment, and industry performance standards applicable to similar application systems and user environments. The on-line response times and batch job turn-around times are specified for average and peak system loads, defined as follows:

- the average system load would consist of twelve (18) concurrent on-line user sessions (35 % of the total projected number of users), and two concurrent batch processes; and
- the peak system load would consist of 24 on-line users (50 % of the total projected number of users), and two concurrent batch processes.

The system load definitions assume a Relational Data Base Management System (RDBMS) and 4 GL development language application environment.

3.2.1 On-line Response Time

The on-line response time requirements are as follows:

a. On-line response time for insertion of new master file records and new transactions on a full screen basis must be less than five (5) seconds at average system load and ten (10) seconds at peak system load;

b. On-line response time for update of master file records and transactions on a full screen basis must be less than five (5) seconds at average system load and ten (10) seconds at peak system load;

c. On-line response time for logical and/or physical deletions of master file records and transactions on a full screen basis must be less than five (5) seconds at average system load and ten (10) seconds at peak system load;

d. On-line response time for simple inquiries involving the retrieval and display of single master file or transaction records by key must be less than three (3) seconds at average system load and six (6) seconds at peak system load; and

5. On-line response time for complex inquiries or simple on-line reports involving joining two to three tables and displaying one page of information must be less than fifteen (15) seconds at average system load and thirty (30) seconds at peak system load.

3.2.2 Batch Turnaround Times

The batch processing turn-around times must be as follows:

1. Production turn-around time of hard-copy medium complexity reports involving a subset of the MIS data base information must be less than five (5) minutes at average system load, and ten (10) minutes at peak system load;
2. Production turn-around time of hard-copy complex detail and summary reports involving a full set of the MIS data base information must be less than fifteen (15) minutes at average system load, and thirty (30) minutes at peak system load; and
3. Production turn-around time of hard-copy complex month-end and year-end reports involving full sets of the MIS data base information must be less than thirty (30) minutes at average system load, and one hour at peak system load.

3.2.3 Data Accuracy and Integrity

All applications dealing with the Corporate (as opposed to private user data) must meet the following data accuracy and integrity constraints:

a. All on-line entered data must be edited and validated on-line in order to guarantee that only fully verified and validated data is present on the database, and appears on the reports and inquiries at all times.

b. Modifications and deletions of data must meet all applicable TDC procedural and accounting standards, be fully validated against all data constraints, and be subject to proper user access authorization.

c. The Data Base Management System (DBMS) and development tools must provide data consistency and integrity features to ensure that:

- all incomplete logical database updates will be rolled-back from the System Database whether they occur due to user procedures, or application program or system hardware/software failures; and
- if the database becomes logically inconsistent due to system failure, the DBMS must ensure that the database will remain inaccessible to the users until it is restored to the consistent state.

d. The Data Base Management System (DBMS) must ensure full recovery from system failures resulting in physical damage or destruction of recording media by means of the roll forward recovery to fully consistent logical state from the backup media and log files up to the point of failure or availability of undamaged backup media and log files.

3.3 SECURITY, AUDIT AND LANGUAGE REQUIREMENTS

3.3.1 System Security

The MIS application environment must meet the following system and data security requirements for all TDC systems (applications involving other than data of purely personal nature).

System Level Security

All hardware systems dealing with TDC applications, whether multi-user systems or personal computers, must provide password security based on User-IDs at the system access (log-on) level. The passwords must be periodically changed via an approved security procedure. As well, all attempts at breaking the system security must be logged, periodically analyzed and reported.

Application Level Security

All applications dealing with corporate data must provide application level security which will provide access to the specific application functions to authorized users only.

Database Level Security

The application databases accessed by multiple users must provide for data security for read and modify operations at the data table (file) and data item (field) levels. The user authorization to modify data should be granted only at the application program level via separate access authorizations for each separately authorized user view.

In the event that the database administrator retains the full ownership of, and access to data, all modifications of data via the database administrator's access authorization must be logged and reported.

3.3.2 System Audit

The system environments dealing with corporate data must provide the following audit trails:

a. The ability to log at the operating system level specific operating system commands which can provide access to alter the application databases.

b. The database management system (DBMS) must provide the capability to selectively log and report modifications of data via other than authorized application programs.

Also, all master and transaction file maintenance programs must log the User-IDs of users who create or modify any data. The latter form of application audit trails are often more desirable since they provide on-line audit trails, and usually entail less processing overhead than separate log files for routine database operations.

c. All application programs which enter or update data of financial or similarly sensitive nature should produce daily transaction registers by transaction type and user-id. The daily registers can be filed to provide off-line audit trails.

3.3.3 Language Requirements

The following are the recommended language requirements for the TDC user environment:

a. The application systems serving a wide variety of users with different language preferences must be bilingual (English and French). The preferred language interface for each user can be specified at the user-id level, or selected by the users via the application access menus.

b. Application systems serving a smaller user area with one preferred language (French or English) should preferably be bilingual, but they may be acceptable in the preferred language of the users.

c. The user interfaces of the personal productivity tools accessible only to professional users such as managers and project officers should preferably be bilingual, however, unilingual solutions should not be excluded purely on the merit of the language.

d. Technical system interfaces concerning only application programmers, system operators, and system administrator may be unilingual (possibly based on the language preference of the technical staff), since technically viable bilingual system interfaces may not be readily available.

4. IMPACT ASSESSMENT

This section summarizes the potential improvements and benefits form the proposed systems, and assesses their impact on related systems and staffing.

4.1 POTENTIAL IMPROVEMENTS

4.1.1 Ideal Situation

The ideal information systems situation at TDC would involve:

1. An improved, integrated Management Information System (MIS) which would meet all the requirements of the TDC Project Officers, Financial Services, Administrative Support Services, and TDC and Transport Canada Management as per User Requirements defined in Section 3 above.

2. A set of microcomputer-based productivity software tools for Project Officers integrated with the MIS environment to permit transfers of data between the MIS data base and the microcomputer based productivity tools.

3. A set of Administrative Support application systems based on microcomputers, and integrated with the MIS environment via the local Area Network (LAN) to permit exchange of data between related systems, and integration with the accounting systems where required.

4. Automation of the document preparation, processing and routing procedures related to the TDC Project Procedures on the basis of the existing TDC Project Procedure Manuals via the Office Automation Systems consisting of electronic document processing and exchange software fully compatible with the Transport Canada Network (TCN) application environment.

5. An integrated hardware/software/communications environment capable of fully supporting all TDC applications, and consisting of:

    a. A minicomputer supporting the Management Information System (MIS) application, and acting as a TDC local area network (LAN) controller for the intelligent workstations, as well as providing a gateway to the Transport Canada Network (TCN).

b. A TDC local area network (LAN) of intelligent workstations (microcomputers) and peripherals supporting:

   - stand-alone information systems used by only one user area;
   - Project Officers' productivity and personal services tools;
   - office automation applications related to preparation and routing of documents; and
   - providing access to Transport Canada Network for exchange of information, sharing of authorized applications, and use of specialized peripherals.

c. data entry terminals for MIS applications where local processing capability is not required.

6. An application software environment fully compatible with the Department's Communications and Informatics standards, consisting of:

   a. A minicomputer-based, relational database management system based on the proposed ANSII/ISO SQL standard with a complete set of 4 GL development tools, providing database access interface compatible with Transport Canada's future applications, and microcomputer based local applications and office automation environment.

   b. A microcomputer-based relational database management system with a complete set of fourth G/L development tools providing database access compatibility with the minicomputer-based MIS applications, and office automation environment, as well as allowing exchange of similar applications developed at other Transport Canada locations.

   c. A set of microcomputer-based productivity and personal services tools for TDC Project Officers, providing data exchange compatibility with the microcomputer-based local applications and databases, and the minicomputer-based MIS application.

d. Office automation application software capable of meeting all TDC requirements for document preparation and processing, and providing document exchange compatible with the TCN office automation environment and applications.

4.1.2 Organizational Impact

The following summarizes the anticipated organizational impact resulting from implementation of the proposed new or upgraded management information and office automation systems at TDC:

1. The new integrated Informatics hardware/software/communications environment will:
    a. resolve the performance and connectivity related limitations of the existing obsolete PDP 11/44 hardware/software/communications environment on a long term basis;
    b. provide a solid basis for continued development and implementation of TDC management information systems and office automation applications for foreseeable future (five to ten years);
    c. reduce the high support costs and risks inherent in the present TDC dependence on single source support of its application systems and facilities management, and enable the Transport Canada Regional Informatics resources to play a greater role in support of TDC information and office automation systems requirements.
2. An integrated Management Information System (MIS) which will fully meets the requirements of all TDC user areas, based on sound relational technology, and departmental development and documentation standards will;
    a. Provide the TDC Financial Services user area with well structured, fully documented and user friendly information system meeting all functional, performance, data and system integrity, and security and audit trail requirements.

       This will significantly reduce the on-going user support requirements, and improve the integrity and audit trails of the Financial Systems.

b. Provide the Project Officers, Chiefs and Modal Coordinators with custom designed application software meeting all their needs for R&D Project planning, monitoring and analysis, as well as data transport capability between the MIS database and the microcomputer-based productivity tools.

   This will enable the Project Officers to improve their control of R&D Projects, reduce the frustration associated with individual solutions to the common problems, and substantially improve the quality and productivity of their work.

c. Provide the TDC Administrative Support Services with the Project Completion Procedures, and Publications Management and Distribution Subsystems, integrated with the Project Management Subsystem and related Library Classification and Mailing List Systems.

   This will eliminate redundancy of the data entry and maintenance procedures, and provide significant gains in clerical productivity.

d. Provide the Management and Project Officers with an unlimited ad-hoc retrieval capability via the MIS normalized, relational database model, and standard structured query language (SQL) without undue penalty in on-line system performance.

e. Provide the technical basis for integration of the Management Information System (MIS) application with the Office Automation applications on a Department-wide basis.

3. The functional and technical upgrading of the existing stand-alone applications to SQL-based relational database and 4 GL environment with data access and transport compatibility with other applications will:

   a. Enable Transport Canada's Informatics Unit at Dorval to assume greater responsibility for development and support of these systems, and provide the opportunity to take advantage of similar applications developed elsewhere within Transport Canada.

   b. Provide substantial gains in clerical productivity resulting from reduced duplication of data entry and maintenance operations, and improved quality and timeliness of information resulting from systems integration.

4. Automation of the TDC Project Procedures and Documents related to R&D Project identification, definition, approval, funding and contracting phases via office automation software and communications network compatible with Transport Canada Network will:

   a. Reduce the amount of manual labour in preparation of the Project documents by enabling Project Officers to produce copies by retrieving and combining the information from the MIS database and other similar documents, then routing the draft to a Secretary for preparation and production of the final document.

      Once the document is finished, the Secretary can rout the document back to the Project Officer for review and routing to the appropriate management authority for review and approval, and so on.

   b. Automate the time consuming tasks of the Project Officers, Chiefs, and Secretaries related to routing of Project documents, and following up on the status of the documents in various stages of approval.

      Since the Project Officers, Chiefs and Secretaries constitute the potentially largest group of MIS users, a significant improvement in productivity, timeliness and management control in this area will have a relatively large impact on the overall performance of the TDC organization.

   c. Provide the Project Officers and Secretaries with effective tools for management of events, facilities, and personal workload via an appropriate Personal Services software package. This will eventually lead to improved utilization of time and facilities for the majority of TDC professional and administrative staff.

   d. Provide the capability for follow-up on project documents and other messages via the electronic message/document distribution software across the domain of the Transport Canada Network (TCN). This could significantly reduce the project review and approval turn-around time.

   e. Provide a common communications interface with the Performing Organizations accessible to all Project Officers on the Local Area Network via the TDC LAN controller, and thus effect substantial savings by eliminating the need to duplicate the interface, MODEM and software for every Project Officer.

4.1.3 Anticipated Benefits

The following summarizes the major anticipated benefits resulting from the implementation of the upgraded computer and information systems at TDC.

1. Tangible Benefits

    a. A significant reduction of the clerical time lost in the Financial Services area due to the exceptionally poor response times of the existing MIS System, by providing industry standard transaction response and report turn-around times.

    b. A significant clerical productivity improvement in the Administrative Support Services area resulting from implementation of the on-line Purchasing, Inventory and Budget Systems.

    c. Significant reduction of the high application and user costs while greatly increasing the range of support services by eliminating the TDC dependance on the present single source support, and enabling the Regional Informatics resources to assume a greater role in providing the application and user support services.

    d. Optionally, a reduction of the facilities management costs by enabling the Transport Canada Informatics Group to control the TDC system remotely via the TCN NETVIEW facility, thereby eliminating the need for operating system specialists at TDC.

2. Intangible Benefits

    a. Implementation of the integrated hardware/software/communications environment based on TCN standards would provide a long-term viable environment for development and implementation of information systems and office automation applications for TDC and Transport Canada user areas.

    b. Development of Information and Office Automation Systems based on Transport Canada Informatics methods, procedures and standards would result in well documented and supported systems, and eliminate the risks associated with the present dependence on SSM Inc. for single source support.

c. Well designed, documented, and performant systems with upgraded user functionality would greatly improve the confidence and the overall attitude of TDC end users in all functional areas, as well as the accuracy, timeliness and integrity of information.

d. The enhanced project management capability of the redesigned and upgraded MIS, and application of Office Automation to TDC Project Procedures will increase the effectiveness of the professional and administrative TDC staff, and lead to improved productivity and overall performance of the TDC Organization.

e. The integrated management information and office automation systems will improve the quality of information in support of management decisions, and provide tools for effective follow-up at all levels of management.

f. Integration of the TDC computer systems with the Transport Canada Network environment, and application of departmental technology standards will result in more effective use of Department's information resources, and improved planning and control over their use.

4.2 INTEGRATED ACTIVITIES

The implementation of the proposed integrated MIS, Office Automation and Personal Productivity Systems on the basis of the TDC Local Area Network will result in the following benefits:

a. provide TDC users with improved access to the TDC information resources;

b. eliminate duplication of data entry activities and improve the productivity of clerical staff; and

c. integrate the activities of TDC professional staff with the secretarial and administrative support staff, and thereby enhance the effectiveness of the Organization as a whole.

4.2.1 Impact On Related Systems

Integration of the TDC minicomputer and Local Area Network with the Transport Canada Network will provide the following benefits:

a. provide Transport Canada Management with direct access to the TDC Management Information and Office Automation Systems from their own network workstations;

b. enable the authorized TDC users to access Transport Canada management information and office automation systems directly from their own workstations.

c. The integrated hardware and compatible software environments will improve the utilization of the Department's existing and future information systems, services and resources across the domain of the Transport Canada Network by:

   - eliminating the duplication of systems development efforts at different locations by porting and modifying the existing applications;

   - sharing of specialized and expensive peripherals;

   - sharing of Transport Canada and Regional support resources.

4.3 HUMAN RESOURCES CONSIDERATIONS

4.3.1 Staffing Requirements

The following addresses the impact of the proposed Systems on end-user and Informatics staffing requirements.

4.3.1.1 End-User Staffing Requirements

The implementation of the proposed integrated management information and office automation systems and facilities will:

a. enable the planned downscaling of clerical staffing levels in the Financial and Administrative Support Services areas;

b. require no additional clerical staffing, and no major reclassification of existing job descriptions other than those resulting from combining and redistributing of the functional responsibilities resulting from the downscaling process.

4.3.1.2 Informatics Support Staffing

The present TDC dependence on the SSM Contractor as the single source of facilities management, application systems maintenance and user support presents unacceptable risks, excessive costs, and limited range and quality of services related to the proposed Information and Office Automation Systems environment. For these reasons, an alternative long-term solution should be formulated to meet TDC's support requirements.

Interviews with the General Director and Directors of Transport Canada's Informatics Group and Manager of the Regional Informatics Unit in Dorval have resulted in the following conclusions:

a. The best solution for long-term operations and technical support could be provided via the Transport Canada Network Operations staff, assuming that the new TDC hardware and software environment provides compatibility with IBM SNA LU 6.2 Advanced Peer to Peer Communications and NETVIEW network management products. This would provide the system management services on a 24 hour, seven days per week basis at a minimal cost through sharing of existing technical resources.

b. The office automation hardware, software, and user support could be provided by the TC Regional Informatics Unit in Dorval who are presently providing these services to over 30 users. Since the selection of the proposed office automation products is based on Transport Canada's standards and approved products list most of which are already in use in the Montreal area this would merely require extending the existing services to TDC.

c. Application systems maintenance and support could also be provided by the Regional Informatics Unit in Dorval, assuming:

  - that the proposed MIS and Administrative Support Systems are based on the proposed ANSII/ISO SQL standard (INFORMIX and ORACLE or equivalent products) which will eventually become departmental/regional standards; and

  - that Regional Informatics staff participate in the analysis and development of the proposed systems in order to acquire the sufficient familiarity with the application systems and user areas.

d. The on-site facilities management services not provided by the TCN Operations staff could be provided by a combination of TDC, Regional and contracted resources (e.g. off-site storage of back-up media).

4.3.2 Training Requirements

4.3.2.1 End-User Training Requirements

The following summarizes the end-user training requirements in person-days per user for implementation of the proposed Information Systems, Productivity Tools, and Office Automation Systems. The training would take place over a period of two to three years.

1. Relational Data Base & 4 GL User Interface

   a. Operator Interface Training:

      - 2 days of initial training, and

      - 1 day of advanced follow-up training per user.

   b. SQL Interface for Ad-hoc Reports

      - 2 days of initial training, and

      - 1 day of advanced follow-up training per user.

   NOTE: SQL Interface training as per (b) above will be required only for the professional users who want to use the ad-hoc reporting capability;

2. Management Information System (MIS)

   The MIS user training will be provided by specific MIS Subsystems and user areas as required. It will provide the users with an overall understanding of the system structure, the operations procedures, and hands-on experience in an MIS test environment. The following training will be required for each major Subsystem and user area:

   a. On-line Data Entry Procedures, 1 to 3 days per user, depending on the complexity of the subsystem;

   b. On-line Report Interface and Reports, 1 day per user.

   c. Day-end, Month-end and Year-end Procedures and Reports, 1 day per user; and

3. Project Officers' Productivity Tools

   The following training will be required for the TDC professional users, including the Project Officers, Chiefs, and Modal Coordinators who want to use the productivity tools:

   a. Graphics Package and Interface with MIS, 1 day of training per user;

b. Electronic Spreadsheet (Lotus 1-2-3) and MIS interface, 2 days of training per user, plus 1 day of advanced follow-up training for advanced users; and

c. TIMELINE Project Management package, 1 day of training per user, plus 1/2 day of advanced follow-up training per user.

d. SQL-based Relational Database Management System (RDBMS) and 4 GL tools:

    - 1 day per user on the relational database and SQL concepts;

    - 1 days per user on the SQL Interface;

    - 1 day per user on the on-line Report Generator interface.

4. Office Automation Systems

The following training will be required for the proposed Office Automation Systems:

a. 2 days per user on the Word Processing package (WordPerfect, Display Writer, or Word);

b. 1 day per user on the Personal Services package;

c. 1 day per user on the Document Distribution system; and

d. 1 day per user on the Project Procedures Specific Applications.

4.3.3 Productivity Improvement

The following summarizes the estimated productivity gains from implementation of the proposed systems:

a. One person-year in the Financial Services resulting from the improved on-line response time and integration of the MIS Financial Subsystem with the General Ledger;

b. One person year in the Administrative Services Group resulting from implementation of the Purchasing and Inventory systems; and

c. Significant productivity improvement in the functional responsibility area of Project Officers, Technology Division Chiefs and Secretaries resulting from the improved MIS Project Management Subsystem, and application of the Office Automation Systems to R&D Project Procedures.

4.3.4 Impact On Collective Agreements

Based on our review of the TDC job descriptions related to the Administrative and Financial Services clerical staff, we do not anticipate any major impact on collective agreements since the implementation of the proposed systems does not entail any duties and responsibilities not already contained in the existing job descriptions.

Any changes to the clerical job descriptions will likely result from combining and redistributing of existing responsibilities into fewer positions.

Similarly, no major impact is foresee on the job descriptions and collective agreements of the Technology Divisions' secretarial staff, since their present job descriptions already contain all the information and office automation related responsibilities.

As well, we do not foresee any significant impact on the responsibilities and collective agreements of the TDC professional staff, since the use of the office automation and personal productivity tools in the future, as at present will be voluntary.

We must emphasize, however, that the introduction of the proposed systems into the TDC user environment will have to be carefully managed to ensure a positive attitude toward changes in all user areas.

5. RECOMMENDATIONS

The recommendations of the User Requirements Study phase are based on the following conclusions.

5.1 CONCLUSIONS

On the positive side, TDC organization has over the last ten years developed a set of financial, administrative, and to a lesser degree, project management application systems which provide a satisfactory functionality for the Financial and Administrative Services user areas. These application systems were initially developed at a reasonable cost and within a reasonable time frame, due to application of the PROCOL 4 GL development tools.

As well, eleven personal computers have been successfully introduced over the last few years into the Financial, Administrative and Project Officers user areas, and the computer literacy of the organization as a whole has been considerably advanced.

On the other hand, the evolution of the TDC computer systems, particularly over the past five years, did not keep pace with the developments in the hardware and software technology, the Department's Informatics standards and procedures were not adequately applied, and the procurement procedures resulted in complete dependence on one vendor support for all of its information systems needs.

This resulted in a number of major system problems and risks which presently inhibit their most effective use, and raise questions full with respect to their present and future viability. The major problems are summarized below:

1. The present DEC PDP 11/44 hardware and RSX 11M-PLUS Operating System software represent obsolete technology which is unsuitable for the on-going support of the TDC Management Information System (MIS). Their limitations account for a large part of the existing response time problems, incompatibility with the Department's DDPN/TCN standards, as well as the incompatibility with the local intelligent workstation environment.

2. The PROCOL quasi-relational database management system and 4 GL development tools provided by the SSM contractor, do not take full advantage of the existing operating system, are incomplete in the areas of database integrity, introduce additional database access overhead, are poorly documented, and do not meet the present industry standards. As such, they do not provide a sound technical basis for development of TDC management information systems in long term.

3. The present Management Information System (MIS) provides insufficient functionality to the Project Officers' user area who are potentially the largest group of MIS users at TDC if adequate MIS Project Management functionality and system performance are provided.

4. The present MIS application does not meet any of the applicable industry standards, and, as such, can not serve as a sound basis for the future evolution of the MIS functionality. The main reasons for this are:

    a. the MIS and G/L databases are poorly structured, mainly due to the piecemeal development process, absence of sound technical standards, and structural limitations of the PROCOL database manager;

    b. the user interface is poorly structured, and the user, system and operations documentation is incomplete, and the standards are poor;

    c. the application software maintenance procedures are carried out in the production library due to the lack of sufficient disk space for a maintenance test environment;

    d. the operations procedures are inadequate, based on the weekly to biweekly database and partial library back-up, and biweekly to monthly full system back-up procedures;

    e. the on-line data entry, maintenance and inquiry response times, and batch report turn-around times are very poor, mainly due to factors (1) and (2) above, and poor database design.

5. The complete and exclusive reliance on the single source vendor for facilities management, application software development and maintenance, and user support results in very high maintenance and support costs, and represents an unacceptable risk to TDC information systems in the long-term.

6. The present TDC practice of managing the SSM contracts by a Chief or a Senior Development Officer on a part time basis, and the present SSM project and time reporting procedures result in:

    a. insufficient control over the SSM contract budgets relative to the actual workload, and the contractor's performance in terms of productivity and quality of deliverables;

    b. lack of sound data processing operations procedures, and development and documentation standards.

7. The single source, uncompetitive contracting practice involving the SSM P.B. Inc. for all consulting advice, application development and maintenance, user support, and facilities management services has resulted in:

    a. poor decisions in the past related to selection of the hardware and software technology;

    b. little incentive on the part of the SSM contractor to perform, and the resulting high cost of maintenance, support, and facilities management services.

5.2 RECOMMENDATIONS

Based on the major findings and conclusions of the User Requirements Phase, we recommend:

1. That the following major objectives be included into the scope of the Feasibility Study Phase:

   a. To replace the existing TDC hardware/software environment with technology which will provide:

      - a sound basis for development and implementation of TDC management information and office automation systems in long term;

      - complete compatibility with Transport Canada Network (TCN) standards, and Department's long term information systems objectives and strategies.

   b. To redesign and redevelop the existing MIS and G/L application systems to meet the following objectives:

      - to provide the functionality of the existing MIS Financial and Administrative Subsystems, and meet the basic requirements of the Project Officers for planning, monitoring and performance analysis of R&D Projects and Programs;

      - to implement the MIS Application in the industry standard, relational technology compatible with the Department's Informatics standards, in order to ensure the most effective use of Department's information systems resources, and reduce the risks and expenses associated with the present TDC dependence on the single source support;

      - ensure the full application of the Department's Systems Development Life Cycle (SDLC) procedures relative to systems selection, procurement, development and implementation procedures.

   c. To comply with the DSS procurement procedures based on competitive bidding for the hardware and software and ensure compliance with the Department's Informatics standards and procedures.

2. That the SSM contractor's resources provided by the existing, and interim future contracts be channeled toward the following objectives:

    a. To upgrade of the existing MIS user interface, and system, user and operations documentation so as to meet the minimum departmental standards, and provide the Detailed Functional Analysis Phase with the required information.

    b. To improve the training of the SSM support staff in order to minimize the existing risks to TDC systems from the potential turnover of key support personnel, and enable TDC to gradually reduce the support costs by downscaling the number of SSM support staff.

3. That a greater role be assigned to the Transport Canada Informatics Unit in Dorval in the following areas:

    a. TDC decision making process related to formulation of the future SSM support contracts, and management of the existing contract in order to ensure a reasonable level of contractor performance, and compliance with the minimal departmental standards.

    b. Selection and procurement of TDC office automation hardware and software, and planning and implementing of TDC office automation training and support programs.

    c. Selection, development/upgrade, and implementation of TDC stand-alone applications related to the present TDC person-year downscaling program.

5.3 FEASIBILITY STUDY

5.3.1 Tasks And Resources

The following table summarizes the major tasks and resources in person-days related to the Feasibility Study Phase of the Project.

Activity	Person-Days
Prepare Hardware/Software Requirements For Vendor Quotations	2
Interview Management Regarding Implementation Priorities (EDTDC & DGRD)	2
Define Mandatory and Optional Requirements	2
Prepare Evaluation Criteria	2
Define Design Alternatives and Benefits	2
Interview Sources and Prepare Cost and Performance Data	6
Prepare Implementation Estimates and Plans	4
Perform Evaluation Of Alternatives	4
Prepare Preliminary Design Review	2
Preliminary Design Review In Montreal	1
Preliminary Design Review In Ottawa	1
Write Draft Feasibility Study Report	10
Circulate and Review Draft Report Feedback	3
Correct and Complete Draft Report	3
Prepare Final Presentation	2
Present Final Report	1
Project Administration and Progress Reporting	5
Total	47

5.3.2 Schedule of Activities

```
                            JAN.                FEB.                MAR.
                            11  15   22   29    5   12   19   26    3   10   17
Activity                    !    !    !    !    !    !    !    !    !    !    !
______________________________________________________________________________

Prepare Hardware/Software   !__!
Reqmts For Vendor Quotations!
                            !
Interview Management Re.    !
Implementation Priorities   ! !__!
                            !
Define Mandatory and        !
Optional Requirements       !   !__!
                            !
Prepare Evaluation Criteria !     !__!
                            !
Define design Alternatives  !
and Benefits                !       !__!
                            !
Interview Sources and Prepare
Cost and Performance Data   !         !______!
                            !
Prepare Implementation      !
Estimates and Plans         !               !____!
                            !
Perform Evaluation Of       !                    ____
Alternatives                !                   !____!
                            !
Prepare Preliminary Design  !                        __
Review                      !                       !__!
                            !
Preliminary Design Review   !                          __
in Montreal                 !                         !__!
                            !
Preliminary Design Review   !
in Ottawa                   !                           !_!
                            !
Write Draft Feasibility     !                             _
Study Report                !                            !_!
                            !
Circulate and Review Draft  !                              __________
Report Feedback             !                             !__________!
                            !
Correct and Complete        !                                       ___
Draft Report                !                                      !___!
                            !
Prepare Final Presentation  !                                         !___!
                            !
Present Final Report        !                                             !_!
                            !    !    !    !    !    !    !    !    !    !    !
______________________________________________________________________________
                            11  15   22   29    5   12   19   26    3   10   17
```

5.3.3 User Participation

The following Table summarizes the perceived participation of the TDC and Transport Canada resources in the Feasibility Study activities.

Resource	Activity
DGRD and EDTDC	Definition of user requirements and priorities
Mrs. Harris, Director Applications	Provide information on development & documentation standards
Mr. McIndoe, Director Operations	Provide information on TCN operations and communications standards and costs
Mr. Sauve, Director Office Automation	Provide information on TCN standards
Mrs. Ferland, Manager Administrative Services	Provide P-Y cost data on P-Y savings and assess impact on Collective Agreements
Mr. Forget, Manager Communications, Regional Informatics Unit	Provide cost data on TCN and development, maintenance and user support

6. USER REQUIREMENTS PHASE CHECKPOINT

6.1 CHECKLIST OF CRITICAL ITEMS

		YES	NO
1.	Environment investigated and documented	Y	
2.	Existing information systems documented	Y	
3.	Problems/opportunities defined	Y	
4.	Information requirements accurately defined	Y	
5.	Performance requirements accurately defined	Y	
6.	Security and audit requirements defined	Y	
7.	Impact assessment completed	Y	
8.	Recommendations made	Y	
9.	Planning for next Phase completed	Y	
10.	Application profile updated	* N/A	

* NOTE: Completing the application profile was waived by Transport Canada DCI Coordinator and TDC Project Manager.

6.2 SIGN-OFFS

Client/Owner: ______________________________

Date: ______________________________

Project Manager: ______________________________

Date: ______________________________

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TRANSPORTATION DEVELOPMENT CENTRE

COMPUTER SYSTEMS REQUIREMENTS AND RECOMMENDATIONS

VOLUME 2 OF 4

FEASIBILITY STUDY REPORT

DIGI-PLUS Inc.

January 12, 1989

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1. INTRODUCTION

This report is the result of the SDLC Phase 2, Feasibility Study of TDC Computer Systems Evaluation and Recommendations Study. Its conduct and results are based on:

a. The initial objectives and scope of the study outlined in the TDC Work Statement;

b. The TDC user requirements defined in the course of the SDLC Phase I, User Requirements Study, and presented in the User Requirements Report;

c. The Transport Canada Communications and Informatics standards and guidelines applicable to the conduct of this study, and selection of the recommended equipment and software;

d. TDC management priorities, based on the present TDC management information and office automation systems situation, and the short, medium and long term requirements.

1.1 BACKGROUND

Digi-Plus Inc. has over the past 4 1/2 months completed the User Requirements Phase of TDC Computer Systems Evaluation and Recommendations study with the major objectives to:

- review all existing TDC management information systems and procedures;
- perform an in-depth analysis and definition of TDC users' information systems requirements;
- define major problems within the existing situation relative to meeting the TDC user requirements;
- review of the applicable Department's standards, policies, plans and guidelines;
- formulation of recommendations relative to the Feasibility Study Phase.

For the background to the TDC Computer Systems Evaluation and Requirements Study, please, refer to Section 1, Introduction, of the Phase I User Requirements Report.

1.1.1 Summary of Existing Systems' Problems

The following paragraphs provide a brief summary of the existing systems problems on the basis of the full outline provided in Section 2.3 of this report.

1. System Performance

The poor on-line performance of the present PDP/11 hardware environment is the most serious problem of the existing TDC Management Information System (MIS). The response times of data entry and on-line programs and simple database queries observed were all on the order of minutes as compared to seconds based on industry standards. The major causes of the performance problems are:

- a combination of the 64 Kbytes addressing limit of the DEC PDP 11/44 processor and PROCOL pseudo relational data base and 4GL, which result in excessive disk code and data swapping activities under practically any system load;

- undersized and unbalanced PDP 11/44 single disk drive system configuration which results in disk I/O saturation while the CPU is less than 30 % busy;

- the essentially network structure of the PROCOL data base manager which requires predefined 'relational' links pointing to indexed data fields for any inner relational join of two files, thus resulting in an excessive number of links and indexes in the MIS and G/L data bases, and thus excessive data maintenance overhead, or limited access to data, or both;

- poorly designed MIS and G/L data bases due to poor and evolutionary database design practices, and the aforesaid limitations of the PROCOL pseudo-relational database manager.

1.1.1 Summary of Existing Systems' Problems (Cont'd)

2. MIS System Functionality

The present MIS system provides adequate functionality for the Financial Services and Administrative Support user areas, and for EDTDC and DGRD management reporting requirements. However, it falls far short of the TDC Project Officers' requirements for effective on-line tools for the purposes of planning, monitoring and managing of the numerous R&D Projects, and analysis of the performance of the projects. The major causes of these shortcomings are as follows:

- the TDC MIS and G/L systems were developed gradually over the period of a number of years, and under the Project Management authority of specific major users of the system who gave preference to their own views and priorities of the overall requirements; moreover, since these users were not data processing professionals, their views and priorities resulted in poorly structured databases and applications;
- because the data ownership and responsibility issues related to the Funding Contract and R&D Project data entities was never successfully resolved, primarily due to the aforesaid project management approach, it resulted in a non-normalized and redundant MIS database structure which can not serve as a sound basis of a future development of such Project Management capability;
- due to the poor results of the past computerization efforts and partizan project management approaches, most Project Officers who are highly conversant with the functional requirements and computer technology related to TDC project management requirements have opted for individual efforts in solving the problem rather than pool their experience and resources and solve the problem in the context of TDC MIS system.

3. MIS User Interface

The present MIS user interface is suffering from a number of major problems most of which are related to the poor application development standards, poor documentation, and PROCOL product. The following is a summary of the major problems:

1.1.1 Summary of Existing Systems' Problems (Cont'd)

- the entire MIS system was developed largely as sets of specific user programming requests; this is still reflected in the present MIS menu structure which consists of a large number of fragmented specific user menus named by first name or title of the user; the system lacks an overall, well structured menu system which would clearly convey its structure, purpose and functionality;

- there is a total lack of development and naming standards that would clearly convey to a casual user the purpose of each menu function, the scope and meaning of data presented, and which menu function produced which report; approximately 20 - 30 % of reports lack even a report heading;

- the main maintenance menu in the Financial Services area groups more than forty (40) functions, mixing in a random fashion on-line maintenance functions with daily, weekly and monthly batch procedures, thus bewildering the users with respect to the correct choice, as well as rendering the user interface unnecessarily hazardous;

- in general, the same formatted screens that are used for record insert and display operations are also used for record update operations which can only modify a small subset of the record fields; the absence of separate highlighting of the modifiable fields is often confusing to the data entry operators;

- execution of routine data maintenance and reporting functions results in system error messages which are not documented in the user documentation, and with unpredictable results, or often no results whatever;

- the PROCOL add-hoc reporting interface in its simplest form is nonstandard and highly cryptic, referring to data tables by their abbreviated names, columns by their positional number within a table; at the advanced user level, it is an unstructured and highly cryptic procedural language with no menu driven forms and report oriented user interfaces.

1.1.1 Summary of Existing Systems' Problems (Cont'd)

4. System and Data Integrity

The present MIS production environment is also subject to a number of system and data integrity related problems, including:

- the RSX 11M-PLUS operating system is poorly understood by both, the SSM contractor staff, and the DEC maintenance staff, resulting in frequent crashes which are difficult to diagnose and restore.
- PROCOL database manager software does not provide the usual database integrity features of a logical transaction commit and back-out control, which is particularly important given its 'relational link' oriented structure for which it also provides no integrity features;
- the frequency of the weekly to biweekly database back-up procedures, and the biweekly to monthly complete system back-up procedures performed by the SSM contractor staff responsible for the facilities is insufficient to guarantee a reasonable database integrity, particularly in the face of the frequent operating system failures; this requires parallel manual maintenance of important MIS financial information.

5. MIS Documentation

Even though most of the MIS subsystems are documented in either the on-line and off-line form, and PROCOL user interface produces some minimal documentation, overall, the user, system and technical documentation is poor and incomplete, thus rendering the system vulnerable to any significant personnel turnover involving the SSM support personnel or key TDC staff. The following is a brief summary of our comments:

- the PROCOL produced documentation is limited to list of database files, field layouts, and data and key file statistics;

1.1.1 Summary of Existing Systems' Problems (Cont'd)

- the user documentation is generally limited to minimal sign-on and sign-off procedures, minimal PROCOL user dialogue summary, and a page of error messages; in addition, a paragraph of unstructured narrative is typically provided for each system function, thus requiring resort to very cryptic and unstructured PROCOL source code to find out what is really going on;

- in lieu of the application system documentation, the SSM contractor has provided a set of documentation based on the now obsolete flowcharting method which was never conducive to end user environment and serves little purpose now.

6. MIS Support

From the outset of TDC in-house computer facilities and application systems development, SSM P.B. Inc. has been awarded all contracts related to providing consulting advice, choice of technology and vendors, providing hardware and installation services, analyzing user requirements, developing and maintaining application systems and systems software, and providing the facilities management on a single source basis.

Our review of the MIS support issues resulted in the following conclusions:

- due to the contracting and contract management practices, poor system design and documentation, and obsolete hardware and software, the same number of SSM contractor personnel are presently engaged in facilities management, system maintenance and user support as were originally in development and other activities together;

- the application support is not based on adequate user interface, documentation and system integrity, but rather the on-site presence of SSM Contractor's staff at all times;

- given the poor system design and documentation, the on-going viability of TDC's MIS is highly dependent on the continued presence of SSM's support staff who have participated in the application development.

1.1.1 Summary of Existing Systems' Problems (Cont'd)

7. MIS Contracting and Management

Our review of the contracting procedures and SSM contractor's performance has established the following:

- Contracts related to all of above activities are awarded on the basis of one page cost estimate summaries;
- when the contract funds are expended before expiration of the contract period, new ones are simply awarded;
- TDC Chief or Project Officer charged with managing the SSM contracts has little visibility and control over the actual system and application maintenance, user support and facilities management workload, as well as the SSM contractor's staff attendance, productivity and performance on the basis of the present time and job reporting practices;
- no Departmental Informatics standards are in place or required from the SSM contractor.

1.1.2 Summary of User Requirements

The following provides a brief summary of the TDC user requirements, broken down by application and user areas, and presented in the order of TDC priorities as defined by EDTDC, Mr. Rudback.

1. To upgrade the performance of the present Management Information System (MIS) by replacing the existing obsolete PDP 11/44 hardware and RSX 11M-PLUS operating system with an adequately sized hardware configuration, and an operating system which will:
    a. provide the short term performance improvement of the MIS application via migration of the existing PROCOL-based MIS software to the new hardware.
    b. provide the local area network hardware and software for integration of all TDC management information and office automation systems and devices into a TDC Local Area Network;

1.1.2 Summary of User Requirements (Cont'd)

c. provide a gateway between the TDC Local Area Network and the Transport Canada Network (TCN) via IBM SNA 3270 communications standard which will allow TDC users access to the TCN DISOSS services and other applications from intelligent workstations;

d. provide a sound application development environment for the medium term redevelopment and functional upgrade of the MIS application which will meet the functional and performance requirements of all MIS user areas, and Department's technical, documentation and user support standards.

2. To implement a microcomputer-based, on-line Purchasing, Inventory, and Administrative Budget Management System for TDC Administrative Support Services.

3. To provide the Project Officers with an effective set of tools for planning, monitoring, and analysis of R&D Projects on the basis of:

    a. a functionally and technically improved MIS system which will include an integrated Project Management Subsystem meeting the basic requirements of planning, monitoring and management of R&D Projects;

    b. a set of professional productivity tools compatible with the MIS integrated database at the data import/ export level.

4. To integrate all TDC management information and office automation systems and devices into a TDC Local Area Network, and provide the file transfer and peripheral sharing capability to all TDC users of intelligent workstations.

5. Upgrade the existing Research Library application systems as follows:

    a. upgrade the capacity and performance of the existing Research Library Mailing List System and the Library Acquisition System by replacing the existing IBM PC/XT system with an IBM PC/AT compatible processor, and a larger and faster disk drive;

1.1.2 Summary of User Requirements (Cont'd)

   b. upgrade the Mailing List and Library Acquisition Systems from the old non-SQL Informix to Informix-SQL environment in order to improve the long term viability and support of these applications;

   c. upgrade the availability and service level of the Library cataloguing and literature search operations by implementing these applications on a separate IBM PC/AT or compatible.

6. Upgrade the existing single user Apollo 3000 based Interleaf Desktop Publishing system as follows:

   a. add three low cost intelligent workstations based on two existing IBM PC/3270s and one new IBM PC/AT or compatible, and the Interleaf Workstation Emulation Software Package provided by Interleaf;

   b. provide extended mass storage capability via a high speed link with the MIS system using the Ethernet LAN interface and software provided by Interleaf vendor;

7. Implement an integrated set of Office Automation software packages compatible with the TCN DISOSS services at the document exchange level (FFT and MFT), in order to:

   a. automate the creation, distribution and tracking of documents related to the definition, approval and contracting phases of TDC R&D Project Procedures via a TDC electronic mail system;

   b. provide on-line storage and retrieval of the R&D Project related documents;

   c. provide to TDC management, professional users and secretaries a set of personal productivity tools for planning, management and coordination of activities;

   d. provide all management information systems and office automation users with access to any authorized TCN applications, services and devices.

Following are detailed users requirements in terms of systems hardware, software packages, and application systems.

1.1.2.1 Management Information System (MIS) Requirements

1.1.2.1.1 MIS Hardware Requirements

A. Mandatory Hardware Requirements

1. Replacement of DEC PDP 11/44 Processor

To replace the existing obsolete and undersized DEC PDP 11/44 hardware, and the obsolete RSX 11M-PLUS operating system environment with adequately sized, and long term viable processor and operating system which will:

a. Provide the ability to connect a total of 48 MIS users via an estimated 6 to 12 CRT terminals connected directly to the CPU, and 36 intelligent workstations connected via a TDC Local Area Network.

The 6 to 12 CRT terminal users must be able to access the local MIS applications and data base as directly attached CRT terminals, and any authorized systems, applications and databases within the Transport Canada Network (TCN) by emulating the IBM 3270 terminal protocol.

The 36 intelligent workstation users on the TDC Local Area Network must able to access the MIS application via application programs and add-hoc inquiries in native terminal emulation mode, transfer extracted information to their own processor for further processing using the professional productivity tools, transfer their own files to and from the MIS mass storage devices, use any special peripherals on the TDC LAN, MIS system, or TCN, and access authorized applications, services or devices on the TCN.

b. Provide the processing power to provide industry standard on-line response and batch job turnaround times as outlined in Table 1.1 below for the average system load of 18 concurrent MIS users and two batch jobs, and the peak load of 24 concurrent users and two concurrent batch jobs.

1.1.2.1.1 MIS Hardware Requirements (Cont'd)

Table 1.1 Average and Peak System Load Performance

Transaction/Job Type	Medium Load Performance	Peak Load Performance
Medium Data Entry Trans. (insert 3 records, 9 keys)	3 sec	9 sec
Medium Update Trans. (update 3 records, 3 keys)	2 sec	6 sec
Medium Inquiry by Key (scan 60 records from 2 tables and display 20 records)	3 sec	10 sec
Medium Seq. Inquiry/Report (scan 3000 records from one table and display 20 records)	15 sec	30 sec
Medium Batch Job (scan 3000 records, update 300 records, and print a 10 page report)	5 min	15 min
Heavy Batch Job (scan 3000 records, update 300 records, and produce 12 month-end reports)	30 min	90 min

1.1.2.1.1 MIS Hardware Requirements (Cont'd)

2. Existing MIS Performance Upgrade

   To upgrade the performance of the present MIS application based on the SSM P.B. Inc. PROCOL data base manager and 4GL, to meet the short term TDC performance objectives outlined in Table 1.1 above. To meet this requirement, the MIS processor must meet the following requirements:

   a. provide proven support of concurrent Unix V based operating system with the primary operating system which will be used for development, or provide a Unix V based operating system which will meet all of the System and Application Software requirements;

   b. provide proven support of the SSM P.B. Inc.'s PROCOL database manager and 4GL, and proven or demonstrated capability to off-load the entire PROCOL based MIS and PMU application systems and databases via a communication line;

   c. Provide a proven or demonstrated capability to support the MIS and PMU application programs and databases without any modifications, or minor modifications on the basis of a fixed cost and time conversion.

3. Mass Storage and Peripherals

   The following mass storage and peripheral equipment must be accessible to all CRT terminals attached directly to the MIS processor, and intelligent workstations attached via the TDC LAN:

   a. 600 Mbytes of mass storage space attached to the MIS processor/LAN controller, consisting of a minimum of 2 disk drives, expandable by 50 % to 900 Mbytes, or at least 3 disk drives;

   b. two 400 LPM, 132 column dot matrix or band printers, one for the Financial Services and Administrative Support user areas, and one for the Project Officers' user area;

1.1.2.1.1 MIS Hardware Requirements (Cont'd)

c. one 80 column laser printer, ten pages per minute, and cut paper feed mechanism for 8 1/2 x 11 and 8 1/2 x 14 inch paper for production of Project documents and other correspondence by the Project Officers, Chiefs' Secretaries, and Administrative Support Services staff.

4. Terminal Equipment

a. Seven (7) CRT terminal workstations as follows:

- one CRT terminal as the primary system console for the MIS system operator, located in the computer room;
- three (3) CRT terminals for the Financial Services Clerks responsible for the MIS data entry, inquiry and reporting functions;
- one CRT terminal for the Central Registry Clerk responsible for operation of the Publications Management System;
- one CRT terminal for the Administrative Services Supervisor responsible for operation of the MIS Project Completion Phase Subsystem and the Person-Month Utilization System, and;
- one CRT terminal for the MIS Maintenance Programmer function.

b. IBM PC/AT compatible intelligent workstations, and upgrade of the existing intelligent workstations for EDTDC and Chiefs of Technology Divisions as follows:

- four (4) PC/AT compatibles equipped with 640 KB RAM, 20 - 40 MB hard drive, and LAN interface for use as local MIS terminals, 3270 workstations accessing the TCN DISOSS services, intelligent workstations connected to the TDC LAN, and personal productivity tools;

1.1.2.1.1 **MIS Hardware Requirements (Cont'd)**

- Upgrade of two (2) existing IBM PC/AT compatibles with the TDC LAN interface to be used as outlined above.

c. One IBM PC/AT compatible for the Financial Services Manager, used as a local MIS terminal, TCN IBM 3270 workstation, TDC LAN workstation, and personal productivity tool.

5. Upgrade of Existing Personal Computers

To be incorporated into the proposed TDC LAN, the seven existing IBM PC/ATs and compatibles used by EDTDC, the Chiefs and the Project Officers will have to be upgraded with:

- a TDC LAN interface and cable;
- LAN software packages for the MIS processor and the personal computers which will enable them to operate as local MIS terminals, LAN intelligent workstations, and, where required, as TCN 3270 workstations.

B. Optional Hardware Requirements

1. Compatibility of Existing Peripherals

Optionally, the proposed MIS Processor should be capable of connecting:

- six (6) existing DEC VT-220-B2 CRT terminals via microprocessor based controller;
- two existing DEC LA210 Letterprinters via serial RS232 connection;
- two (2) existing DECWriter III serial character printers via serial RS232 connection.

It is assumed that the remaining six (6) DEC VT100 CRT terminals, the six (6) Graph-on and two (2) Cail Systems VT100 emulation terminals are technically obsolete, insufficiently reliable, and have been already depreciated as capital equipment.

1.1.2.1.3 MIS System Software Requirements

The MIS processor must provide the following software capabilities:

a. Provide a multi-user, multi-programming operating system for support of up to 48 total users, using up to eight (8) CRT terminals connected directly to the CPU via a microprocessor based line multiplexer, and up to forty (40) intelligent workstations connected to a TDC Local Area Network, acting as simulated CRT terminals or intelligent workstations;

b. Meet the TCN network standards based on the field proven and full support of IBM SNA LU 6.2 Advanced Peer To Peer Communications hardware and software standards, and IBM 3270 workstation emulation for CRT terminals attached directly to the MIS processor and intelligent workstations attached to the TDC LAN;

c. Provide a set of mutually compatible software packages, including a well supported, industry standard relational database management system (RDBMS), a full ANSII/ISO SQL query language, and a set of SQL based, 4th generation development utilities, including forms development and report generation subsystems, statistical routines and management graphics;

d. Provide an integrated set of Office Automation software packages compatible with the TCN network standards and DISOSS distribution services for document preparation, distribution, update and status monitoring activities related to the TDC R&D Project Procedures and other correspondence;

A. Mandatory MIS Requirements

1. MIS Development Objectives

Since the present MIS database design and PROCOL application environment do not provide a sound basis for development of the required Project Management subsystem, nor do they meet a minimum set of development and documentation standards, the MIS system will have to be redeveloped.

1.1.2.1.3 MIS System Software Requirements (Cont'd)

The objectives of the proposed redevelopment effort would be as follows:

a. to base the MIS application on sound hardware and software technology meeting the existing and long term needs of the TDC user environment and Department's Informatics standards as well as the long term strategic direction in terms of application technology and standards;

b. to redesign and normalize the MIS database in the process of a detailed functional analysis of the requirements of all TDC user areas, and thus eliminate the present MIS limitations of with respect to data integrity, data accessibility, and system performance;

c. to redevelop the MIS application on the basis of Department's Systems Development Life Cycle (SDLC) methodology and standards which will meet the long term goals of the Department in terms of system maintainability and support costs;

d. To improve the integration of the MIS Financial, Project Management and Administrative Support Subsystems, and integrate the MIS System with the General Ledger System, and thus eliminate the redundancy of data and data maintenance procedures, and meet the clerical productivity improvement goals of the TDC Administrative and Financial Services;

e. to integrate the MIS application environment with the Project Officers' and Management's productivity tools, the Office Automation environment, and the Transport Canada Network environment in order to optimize the use of the existing and future information resources on a Department-wide basis;

f. to terminate the present TDC dependence on the single source support, and bring the maintenance and support costs in line with the industry standards, while broadening the range and improving the quality of TDC support services.

1.1.2.1.3 MIS System Software Requirements (Cont'd)

2. MIS Application Software Requirements

To perform a Detailed Functional Analysis, Development and Implementation (Phases 3 to 5 of Departments SDLC Procedures) of the following MIS Subsystems:

a. The General Ledger System, and Conference and Payroll Subsystems, with the objectives of:

  - providing the existing functionality;
  - improving and normalizing the database design;
  - providing a standardized interface for the MIS financial and Administrative Support Systems;
  - upgrading the user interface and technical standards.

b. The MIS Financial Subsystem, with the objectives of:

  - providing the existing user functionality;
  - improving and normalizing the database design, and resolving the existing system performance problems;
  - improving the user interface and technical standards;
  - full integration with the General Ledger System.

c. MIS Project Management Subsystem, with the objectives of:

  - meeting the basic requirements of the Project Officers, Chiefs, and Modal and Special Program Coordinators for effective tools for planning, monitoring and management of the R&D Projects;

1.1.2.1.3 MIS System Software Requirements (Cont'd)

- improving the database design, and fully resolving the present issues of data redundancy, ownership, and responsibility with respect to the MIS Financial Subsystem;
- providing integration with the Project Officers' Productivity Tools environment;
- providing the technological basis for later integration with the R&D Project Procedures Subsystem based on the Office Automation facilities and software.

d. Project Completion Phase, and Publications Inventory and Distribution Subsystems, with the objectives of:

- providing the functionality for management and disposal of Equipment and other Crown's assets related to R&D Projects;
- resolving the data redundancy, ownership and responsibility issues with respect to the Project Management Subsystem;
- improving the user interface and technical standards;
- providing the basis for integration with the Office Automation Systems.

For details pertaining to the existing situation and problems, and TDC user and performance requirements, please, refer to the Sections 2 and 3 of the User Requirements Report of the Phase I study.

1.1.2.2 Project Officers' Productivity Tools

The following IBM PC/XT/AT based software packages are required by some Project Officers as professional productivity tools:

1.1.2.2 Project Officers' Productivity Tools (Cont'd)

a. IBM PC/AT intelligent workstations for the TDC Project Officers, connected via the TDC LAN, and used as local MIS terminals, TDC LAN workstations, and personal productivity tools:

   - two (2) PC/AT compatibles for the Project Officers of the Current Technology Division;

   - four (5) PC/AT compatibles for the Project Officers of the Advanced Technology Division;

   - three (3) PC/AT compatibles for the Project Officers of the Technology Applications Division;

   - four (4) PC/AT compatibles for the Project Officers of the Transportation Systems Technology Division;

   - two (2) PC/AT compatibles for the Project Officers of the Research Analysis and Special Programs Division;

b. a word processing package (WordPerfect Version 4.2, French and U.K. English, and Microsoft WORD are used at present);

c. an electronic spreadsheet package (Lotus 1-2-3 Release 1.A is used as present);

d. a project management package for detailed scheduling and control of R&D Projects (Breakthrough Software Corp's TIME-LINE Version 2.0 is used at present)

e. an SQL based relational database management system (non SQL version of Informix is used at present, but should be replaced with Informix SQL version);

f. an asynchronous communications hardware/software package should be available on the TDC LAN or the MIS processor for access by all Project Officers via their intelligent workstations (Hayes Smart Modem 1200 with SmartCom II software package is used at present on a stand alone PC/XT/AT basis).

1.1.2.3 Administrative Support Systems Requirements

The following summarizes the user requirements of the Administrative Support user areas and applications not directly related to the MIS requirements, including the Research Library, Purchasing and Inventory, and Publishing user areas.

1.1.2.3.1 Purchasing and Budget Control Systems Requirements

The Administrative Support Services require an on-line, integrated Purchasing and Inventory System for management and processing of purchase orders for goods and services, and a Budget Control System for management and control of Administrative Services Budgets. The following will be required to satisfy their need:

a. one PC/AT or compatible with 40 Mbytes of storage and a character printer;

b. a detailed analysis of the functional requirements by the Regional Informatics Unit in Dorval;

c. identification of a suitable existing Transport Canada package, or a third party package that can be modified to meet the TDC requirements;

d. the existing Transport Canada application or third party package will have to be modified and installed by the Regional Informatics Unit or a third party.

1.1.2.3.2 Research Library Systems Requirements

1. Mailing List System

To meet the performance requirements of the mailing address searches by various selection criteria on more than 6000 records, and to make the system maintainable in longer term, the Mailing List System will have to be upgraded as follows:

a. the existing IBM PC/XT system will have to be replaced with an IBM PC/AT or compatible with at least 40 Mbytes, 30 msec average access time disk drive (the PC/XT can be assigned to another user area where the performance is not critical);

1.1.2.3.2 Research Library Systems Requirements (Cont'd)

b. the current version of Informix relational database management system should be upgraded to the SQL version of Informix product to eliminate most of the C language code, and enable performance optimization of serial searches;

c. the existing Informix application code should be converted to the SQL version of Informix by the Department's Regional Informatics resources.

2. Library Acquisition System

The Library Acquisition application running on the same PC as the Mailing List System should be upgraded as follows:

a. the existing Informix application code should be converted to the SQL version of Informix by the Department's Regional Informatics resources;

b. the existing Informix database and application should be enhanced to include the serials acquisition and tracking functions.

3. UTLAS and Literature Search Applications

In order to meet the required service level, the University of Toronto Library Acquisition System (UTLAS) used for cataloguing and borrowing programs, and other Literature Search Systems will have to be based on a separate IBM PC/AT or compatible microcomputer.

1.1.2.3.3 TDC Publications Systems Requirements

To meet the requirements of the TDC Publishing Services, the Apollo 3000 based single workstation Interleaf Publishing System will have to be upgraded as follows:

a. to meet the mass storage capacity requirements for graphics work, the existing 40 Mbytes mass storage space will have to be at least doubled by adding another 40 Mbytes drive, or provide the required mass storage via the TDC LAN and MIS mass storage devices;

1.1.2.3.3 TDC Publications Systems Requirements (Cont'd)

b. provide the required user access by adding three additional Interleaf intelligent workstations consisting of the existing IBM PC/3270 equipment and the Interleaf Workstation Emulation package as follows:

   - add one RS232 serial port to the Apollo 3000 system to provide connections for three additional intelligent workstations;

   - upgrade the existing IBM PC/3270 computer with the Interleaf Workstation Emulation package for use as data entry and editing terminal to the Desktop Publishing System;

   - upgrade the existing IBM PC/3270 personal computer of the TDC Public Relations Service with an additional serial port for connection to the Apollo system, and the Interleaf Workstation Emulation package for use by the English Technical Editor;

   - add one PC/AT or compatible with the Interleaf Workstation Emulation package to the Apollo system, for use by the French Technical Editor;

c. Ethernet LAN transceiver and cable to integrate the Interleaf Publishing System with the TDC LAN via an appropriate LAN gateway.

1.1.2.4 Office Automation Systems Requirements

1.1.2.4.1 TDC Office Automation Objectives

The following summarizes TDC's longer term Office Automation Systems objectives and requirements:

a. To integrate all TDC existing and future management information and office automation systems and devices into an integrated Local Area Network (TDC LAN), and provide a gateway to the Transport Canada Network (TCN);

1.1.2.4.1 TDC Office Automation Objectives (Cont'd)

b. To automate the document preparation, distribution and status tracking activities related to TDC R&D Project Procedures, and other interdepartmental correspondence on the basis of Office Automation software packages compatible with the Department's DISOSS Distribution Services;

c. To introduce a set of Personal Productivity software packages for planning and coordination of events and activities, as well as management of the personal workload by the professionals.

1.1.2.4.2 TDC Office Automation Requirements

The following hardware, software and support services will be required to meet the stated objectives:

1. Hardware Requirements

   a. Two (2) additional IBM PC/XTs or compatibles for the EDTDC's and Chiefs' Secretaries, in addition to the four existing IBM PC/XTs which would be transferred from the present user areas.

      The six PC/XTs would be used as the local MIS workstations for retrieval and occasional update of the MIS information, and as TDC LAN workstations for preparation, production and distribution of the TDC documents.

   b. Upgrade of the six IBM PC/XTs with the LAN interface and cables, and the LAN software packages for the PCs, the TDC LAN controller, and the TCN gateway.

   c. One PC/AT compatible for the Administrative Support Services Manager, used as the local MIS terminal, TDC LAN workstation, TCN 3270 workstation, and personal productivity tool.

   d. Internal TDC LAN cabling and junctions compatible with the TDC LAN standard.

      NOTE: The feasibility of using the present TDC PBX twisted pair wiring should be investigated.

1.1.2.4.2 TDC Office Automation Requirements (Cont'd)

2. Communications Software Requirements

   The communications software requirements for Office Automation applications include:

   a. LAN file transfer software for every PC connected to the TDC LAN;

   b. document exchange software package between the TDC electronic mail system and the TCN DISOSS system for fixed and modifiable format text (FFT and MFT);

3. Application Software Requirements

   a. A word processing package compatible with the TDC electronic mail package, and the TDC LAN print server software;

   b. An Electronic Mail software package resident on the MIS processor, providing the capability to all TDC authorized users to route, monitor status, review, modify and dispose of documents;

   c. A Personal Services software package providing a filing system, calendar, and event scheduling and coordination capabilities.

4. Implementation and Software Support Requirements

   To implement the proposed Office Automation Systems successfully, TDC will require the following training and implementation assistance services:

   a. Initial and follow-up training courses on all software packages for the designated key users by the Regional Support resources or outside resources. The key users can then train and provide assistance to other users.

   b. Implementation planning and assistance services on implementing the TDC R&D Project Procedures on the basis of the existing or modified procedures.

1.2 PARTICIPANTS

The following paragraphs give the participants in the Feasibility Study Phase.

1.2.1 Transport Canada Participants

Mr. N.E. Rudback,EDTDC, provided TDC objectives and priorities;

Mr. H. Posluns,	Project Manager and liaison with TC Communications and Informatics;
Ms. N. Ferland,	Manager of Administrative Support Services, provided objectives for her user areas;
Mr. A. Sidhom,	Manager of Financial Services, provided objectives for his user area;
Mr. G. Ekins	Head of Research Library, provided objectives for his user area;
Mr. M. Therrien	Publications Officer, provided objectives for his user area.

1.2.2 Transport Canada Participants

Mr. M. Plouffe,	Director General, Communications and Informatics
Mr. J. Sauve,	Director, Office Automation and Services, provided guidelines on Transport Canada Network and Informatics standards;
Mrs. R. Harris,	Director, Informatics Applications, provided development standards and policies;
Mr. M. McIndoe,	Director, Informatics Facilities, provided TCN communications and operations standards;

1.2.2 Transport Canada Participants

Mr. S. Benedetti,	Director, Informatics Policy and Planning, provided justification and procurement guidelines;
Mr. G. Verner,	Director, Informatics Resource Management, provided objectives and policies on support staffing;

1.2.3 DIGI-PLUS Participants

F. Novak,	Project Leader, performed the Study and produced the Report;
S. MacClure,	Project Manager
M. Coulombe,	Produced the Draft and Final Reports

1.2.4 SSM P.B. Inc. Participants

Mr. P. Boulay,	President, contracted as the Expert Consultant to TDC Management; provided information on PROCOL conversion and performance;
Mr. D. Kostitch,	Analyst/Programmer, performed the PROCOL conversion and performance benchmark;

1.3 PURPOSE AND CONDUCT

The following paragraphs outline the objectives and methodology of the Feasibility Study;

1.3.1 Objectives of Study

The objectives of the TDC Feasibility Study were:

a. To define a set of TDC user requirements on the basis of the information obtained in the User Requirements Phase, and the conclusions and recommendations submitted in the User Requirements Report.

b. To identify a set of Transport Canada Communications and Informatics standards and guidelines applicable to selection and procurement of TDC Information and Office Automation systems.

c. To propose and elaborate a set of possible solutions, and then select and recommend the most cost-effective solution on the basis of a comparative evaluation of all solutions which meet all mandatory requirements.

d. To compile a set of hardware, software, and development time estimates of the recommended solution for the purpose of procurement of equipment and software, and planning of the succeeding Phases of SDLC activities.

1.3.2 Methodology of Study

The methodology of the Feasibility Study was based entirely on the Transport Canada Communications and Informatics 'Systems Development Life Cycle (SDLC) Procedures. The following is a brief outline of the procedures as understood and applied by Digi-Plus, based on the Table of Contents of this report submitted to, and approved by the Executive Director of TDC, and Transport Canada Informatics Directors.

a. On the basis of the User Requirements Study Report, summarize the existing problems to be solved, and user requirements to be met by the results of this study.

1.3.2 Methodology of Study (Cont'd)

b. On the basis of the summary of problems and user requirements, define a concise set of mandatory and optional requirements.

c. Define a set of possible alternative solutions which may meet the stated requirements.

d. Perform a preliminary evaluation of the alternative solutions based on the mandatory requirements, rejecting all solutions which do not meet the mandatory requirements.

e. Elaborate the remaining feasible solutions in terms of implementation times and costs, as well as risks and impact.

f. Develop a set of evaluation points for each optional or variable requirement (a requirement which can be met to a variable measure.

g. Perform a comparative analysis of the viable solutions in terms of: meeting the variable mandatory, and optional requirements; performance; and implementation times and costs.

h. For the best resulting alternative, develop a set of generic specifications which can be met by a number of industry representative vendors.

2. OPTIONS

The purpose of this section is to define a set of possible design alternatives; perform a preliminary analysis of these alternatives against the mandatory requirements; elaborate the viable design alternatives in terms of implementation times and costs, and benefits and impact on the end user environment.

2.1 DESCRIPTION OF DESIGN ALTERNATIVES

The following paragraphs describe the design alternatives considered by this feasibility study, including:

a. continuing the status quo;

b. using Transport Canada's mainframe in Ottawa;

c. using Transport Canada's local processor (Dorval);

d. upgrading the existing equipment at TDC;

e. installing a local processor at TDC;

f. a local micro-computer based network;

g. the most plausible combination of above.

2.1.1 Continuing the Status Quo

Continuing the status quo in terms of the present management information systems and facilities at TDC would imply:

a. very low satisfaction of the end users of virtually all areas, with the possible exception of the PMU system, and the resulting negative influence on the overall moral of the organization;

b. continuing incompatibility of the TDC information systems environment and facilities with the TCN Informatics and office automation environment;

c. unacceptably long data maintenance response times, and reporting turn-around times, which would preclude any success of the planned clerical staff downscaling;

2.1.1 Continuing the Status Quo (Cont'd)

d. continuously high hardware and software maintenance, application maintenance, user support, and facilities management costs;

e. continuous dependance on the single source application development and maintenance, and end user support which represents an unacceptable medium and long term risks;

f. in the economic terms, to continue operating and maintaining the present systems would simply mean throwing good money after bad.

In conclusion, maintaining the present status quo is not a viable alternative, since it does not meet any mandatory or optional requirements.

Figure 2.1 shows the present MIS hardware configuration based on the DEC PDP 11/44 processor, consisting of:

- one DEC PDP 11/44 processor with 1 Mbytes main memory, and 8 Kbytes cache memory;
- one DEC RA80A 120 Mbytes disk drive and controller;
- one DEC TU80 9-track, 1600 BPI tape drive and controller;
- six (9) DEC VT100 CRT screens, 24 lines by 80 columns;
- six (6) DEC VT220 CRT screens, 24 lines by 80 columns;
- nine (9) Graph-On GO100 CRT screens, 24 lines by 80 columns, or 24 lines by 132 columns;
- two (2) Concept HTS CRT screens, 24 lines by 80 columns;
- two (2) DECWriter III serial, dot-matrix printers, 132 columns, 180 CPS;
- two (2) DEC LA210 Letter Printer serial, dot-matrix printers, 132 columns, 240 CPS draft/40 CPS NLQ;
- one DEC LA34 serial, dot-matrix printer.

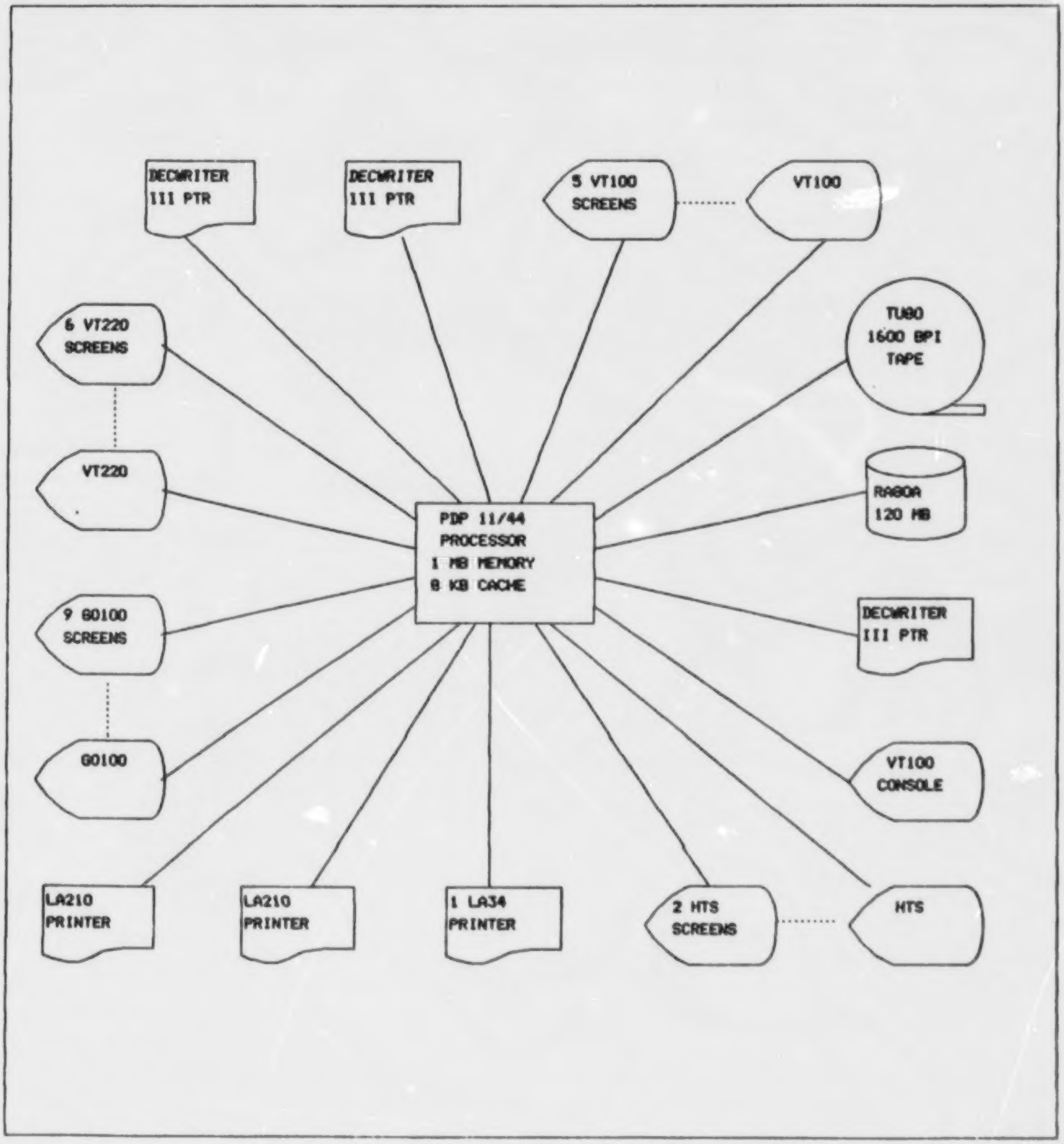
DECWRITER
III PTR
DECWRITER
III PTR
5 VT100
SCREENS
VT100
6 VT220
SCREENS
TU80
1600 BPI
TAPE
VT220
RA80A
120 MB
PDP 11/44
PROCESSOR
1 MB MEMORY
8 KB CACHE
9 G0100
SCREENS
DECWRITER
III PTR
G0100
VT100
CONSOLE
LA210
PRINTER
LA210
PRINTER
1 LA34
PRINTER
2 HTS
SCREENS
HTS

FIGURE 2.1 PRESENT MIS HARDWARE CONFIGURATION

2.1.2 Using TC's Mainframe (Ottawa)

Since the Transport Canada's mainframe does not support the PROCOL database and 4GL environment, this solution would imply that:

a. the present MIS and G/L applications would have to be redeveloped in the Transport Canada's development environment;

b. the redeveloped applications would most likely have to be maintained in Ottawa, while end user support would still have to be provided at the TDC Montreal site;

c. the required on-line and batch services would have to be provided via additional high speed communication lines between Ottawa and Montreal using the existing IBM 3720 Communications Processor in Dorval, additional high speed communication lines between the Regional Informatics site in Dorval and TDC, and 3174 Communication Control Units at TDC;

d. the operations support would be provided by the Informatics Facilities Division of the Headquarter's Communications and Informatics Group.

The Ottawa mainframe solution would consist of the following:

- the TCN (Ottawa) central mainframe production processor, IBM 3084, supporting an estimated average TDC processing load of 18 remote users and two batch processes, or peak load of 24 users and two batch processes;
- 500 Mbytes of mass storage space (DASD) for storage of TDC software and data;
- the TCN (Ottawa) IBM 7225 Communications Controller supporting a total of up to 48 remote users at TDC in Montreal;
- one primary, non-switched 9600 BPS communication line between the TCN mainframe in Ottawa, and the Regional Informatics Group site in Dorval, or alternately, the TDC site in Montreal;

2.1.2 Using TC's Mainframe (Ottawa) (Cont'd)

- one secondary, non-switched 9600 BPS communication line between the TCN central site in Ottawa, and the Regional Informatics Group site in Dorval, or alternately, TDC location in Montreal;
- one pair (2) primary synchronous 9600 BPS MODEMs, one in Ottawa, and the other in Montreal;
- one secondary pair (2) of synchronous 9600 baud MODEMs, one in Ottawa, and the other in Montreal;
- if the Regional Informatics IBM 3720 Communications Processor in Dorval is used, then two 9600 baud lines between the Regional Informatics IBM 3720 Communications Processor, and the TDC Montreal site;
- if the Regional Informatics site IBM 3720 Communications Processor in Dorval is used, then two additional 9600 baud synchronous MODEMs at the Regional Informatics IBM 7220 Communications Processor in Dorval, and two 9600 baud synchronous MODEMs at TDC Montreal site;
- two IBM 3174 Communications Processors at TDC Montreal site, each supporting up to twenty four (24) TDC terminal devices (microcomputers, CRT terminals, and serial printers);
- two (2) medium speed, serial dot-matrix printers, 132 columns, 400 CPS;
- two (2) medium speed, serial laser printers, 80 columns, 10 PPM;
- ten (10) CRT terminals, of that, seven (7) terminals for the Financial and Administrative Services data entry functions, and three (3) terminals for the Chiefs and Senior Development Officers who have expressed no need for the intelligent workstations;
- twenty one (21) additional intelligent workstations, IBM PC/ATs or compatibles with the IBM 3270 communications interface, in addition to the 14 existing or already approved PCs;
- upgrade of the ten (10) existing IBM PC/XT/ATs or compatibles with the IBM 3270 communications interface.

2.1.3 Using TC's Local Processors (Dorval)

Since the existing IBM 4331 Processor in Dorval does not provide the required capacity for the combined TDC and Regional applications load, this solution implies the replacement of the 4331 processor with a more powerful processor. The addition of a second processor in Dorval for TDC's requirements is excluded on the ground that it would be more expensive to operate both, the existing 4331 processor which is now obsolete, and a new processor, in terms of hardware and software maintenance, and operations support than replacing the existing 4331 processor.

Assuming the upgrade alternative of the existing 4331 processor, the Regional Dorval Local processor alternative would imply:

a. single source (IBM) procurement procedure in order to continue support of the existing 40 on-line and batch users on the DOS/VSE operating system, and preservation of the Transport Canada investment in the existing peripherals and communications processors;

b. the capacity plan of the proposed replacement processor for the 4331 in Dorval would have to take into account the processing, storage and communication line capacity requirements of the existing and future TDC and Dorval Regional applications;

c. the proposed replacement processor, operating system, communication software, and application environment would have to be fully compatible with the existing Regional Informatics Facility's environment (IBM DOS/VSE, and CICS/VSAM/COBOL), and the recently installed IBM 3720 Communication Processor, in order to support the existing applications;

d. the communication protocol and line speed between the Regional Dorval processor and the TDC Montreal site would have to be selected to meet the TDC performance and processing throughput requirements;

e. the system software and operations support would be provided by the Headquarters Operations Group in Ottawa, and the Regional Informatics staff in Dorval;

f. the Regional Informatics staff would also provide the TDC applications maintenance and end user support services.

2.1.3 Using TC's Local Processors (Dorval) (Cont'd)

The Local Processor (Dorval) alternative based on a separate IBM 9370 Model 60 Processor is illustrated in Figure 2.2, and consists of:

- the upgrade of the existing IBM 4331-K11 processor to the IBM 9370 Model 60 processor with 16 Mbytes of memory;
- IBM System/370 Block Multiplexer Channel for attachment of System/370 I/O controllers and peripherals;
- the existing two (2) IBM 3370 A01 and B01 disk drives, attached directly to the Block Multiplexer Channel via the 3370 A01 built-in controller;
- the existing 8809-A01 Magnetic Tape Unit, directly attached to the Block Multiplexer Channel via the built-in controller;
- the existing IBM 3720 Communications Controller directly attached to the Block Multiplexer Channel;
- two pairs of synchronous 9600 baud MODEMs, one pair at the Regional Informatics site in Dorval, and the other pair at the TDC downtown Montreal site
- two 9600 baud lines between the Regional Informatics IBM 3220 Communications Processor in Dorval, and the TDC Montreal site;
- two IBM 3174 Communications Controllers at TDC Montreal site, each supporting up to twenty four (24) TDC terminal devices (microcomputers, CRT terminals, and serial printers);
- two (2) medium speed, serial dot-matrix printers, 132 columns, 400 CPS;
- two (2) medium speed, serial laser printers, 80 columns, 10 PPM;
- ten (10) CRT terminals, of that, seven (7) terminals for Financial and Administrative Services data entry functions, and three (3) terminals for the Chiefs and Senior Development Officers who have expressed no need or desire for the intelligent workstations;

2.1.3 Using TC's Local Processors (Dorval) (Cont'd)

- twenty one (21) additional intelligent workstations, IBM PC/AT with the IBM 3270 communications interface, in addition to the 14 existing or already approved PCs;

- upgrade of the ten (10) existing IBM PC/XT/ATs or compatibles with the IBM 3270 communications interface.

2.1.4 Upgrading the Existing Equipment at TDC

Upgrading the existing DEC PDP 11/44 processor is not a viable alternative for the following reasons:

a. the present PDP 11/44 processor does not provide an upgrade path which could overcome the main existing performance limitations, namely the 16 bit processor architecture, the RSX 11M-PLUS operating system memory mapping, the memory utilization algorithm of the PROCOL database manager, the PROCOL database structure, and poor MIS database design, short of replacing the existing processor with a 32 bit machine;

b. the only way that the existing 16 bit hardware could solve the present performance problems would be to redevelop the existing MIS application in a third G/L environment which would represent a great step backward, fail to meet the ad-hoc reporting requirements, and cost far more than replacement of the processor.

In view of the above, upgrade of the existing PDP 11/44 processor is not a viable solution, and must be rejected.

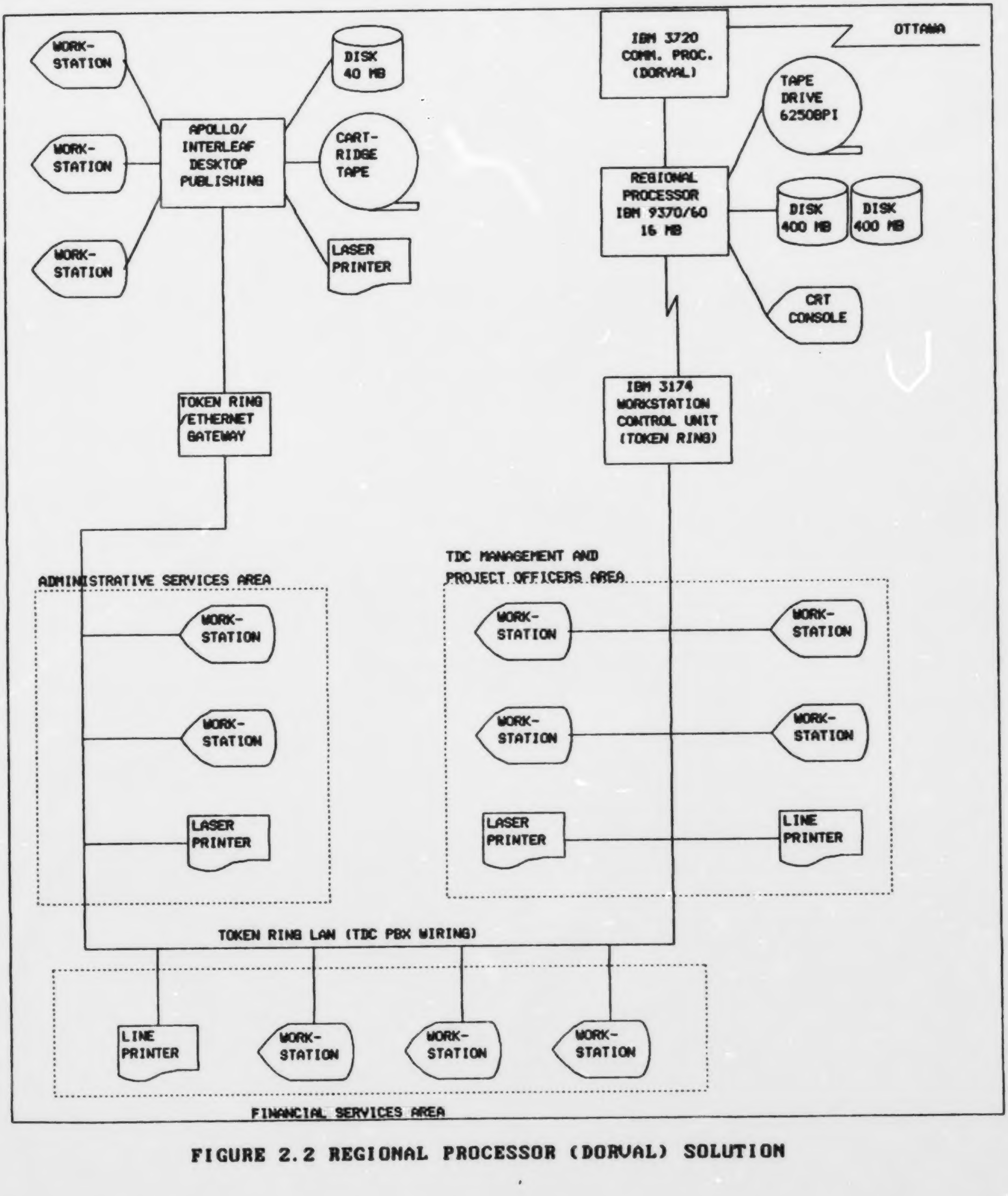
WORK-STATION
WORK-STATION
WORK-STATION
DISK 40 MB
APOLLO/ INTERLEAF DESKTOP PUBLISHING
CART-RIDGE TAPE
LASER PRINTER
IBM 3720 COMM. PROC. (DORVAL)
OTTAWA
TAPE DRIVE 6250BPI
REGIONAL PROCESSOR IBM 9370/60 16 MB
DISK 400 MB
DISK 400 MB
CRT CONSOLE
TOKEN RING /ETHERNET GATEWAY
IBM 3174 WORKSTATION CONTROL UNIT (TOKEN RING)
ADMINISTRATIVE SERVICES AREA
WORK-STATION
WORK-STATION
LASER PRINTER
TDC MANAGEMENT AND PROJECT OFFICERS AREA
WORK-STATION
WORK-STATION
WORK-STATION
WORK-STATION
LASER PRINTER
LINE PRINTER
TOKEN RING LAN (TDC PBX WIRING)
LINE PRINTER
WORK-STATION
WORK-STATION
WORK-STATION
FINANCIAL SERVICES AREA

FIGURE 2.2 REGIONAL PROCESSOR (DORVAL) SOLUTION

2.1.5 Installing a Local Processor at TDC

Since TDC already has a local processor, this option implies replacement of the existing PDP 11/44 processor with the state-of-the-art technology which will:

a. provide the processing, storage, and communications capacity that will meet the performance objectives of TDC under the short and medium term processing load, and provide an economical upgrade path that will meet the long term TDC processing requirements;

b. meet all the mandatory requirements related to the operating system, communications software, development environment and application software packages required by TDC, and comply with all applicable Transport Canada Informatics and TCN network standards;

c. optionally, provide a proven short term solution to the existing MIS performance problems via migration of the PROCOL database manager and the existing MIS application to the new hardware environment at the cost of a minor conversion effort on a fixed price basis.

The TDC local processor alternative is illustrated by the configuration diagram, Figure 2.1 (except for the communication line to Ottawa), and consists of the following:

- a local replacement processor for the DEC PDP 11/44 processor, based on the 32 bit architecture, providing a processing capacity of 4 million instructions per second (MIPS), 8 - 16 Mbytes of main memory depending on the operating system memory demand, and 64 Kbytes of high speed cache memory;
- two disk drives of 600 Mbytes total capacity, expandable to at least 900 Mbytes and three drives, attached via an intelligent disk/tape controller based on a separate microprocessor;
- one 9 track, 6250 BPI magnetic tape unit, or a cartridge tape unit of at least 120 Mbytes capacity per cartridge;

2.1.5 Installing a Local Processor at TDC (Cont'd)

- one or more local communications controllers based on separate microprocessors, capable of supporting up to sixty (60) local CRT terminals, intelligent workstations and serial printers via the RS422 point-to-point or multi-point (daisy chain) hardwired connection;
- a gateway to the Ethernet based Apollo 3000 processor supporting the Interleaf desktop publishing system (unless the local area network provided is Ethernet LAN);
- a gateway to the Transport Canada Network (TCN) based on the IBM SNA communication network architecture supporting the DISOSS Document Distribution System architecture, 3270 terminal pass-trough communications capability for all local CRT and intelligent terminals, and SNA LU 6.2 Advanced Peer To Peer communications via the IBM 3720 Communications Processor in Dorval;
- one 9600 baud line between the TDC local processor in Montreal and the Regional Informatics IBM 3720 Communications Processor in Dorval;
- two (2) medium speed, serial dot-matrix printers, 132 columns, 400 CPS;
- two (2) medium speed, serial laser printers, 80 columns, 10 PPM;
- ten (10) CRT terminals, of that, seven (7) terminals for Financial and Administrative Services data entry functions, and three (3) terminals for the Chiefs and Senior Development Officers who have expressed no need or desire for the intelligent workstations;
- twenty one (21) additional intelligent workstations, IBM PC/XT/ATs or compatibles with the appropriate interface to the local processor, in addition to the 14 existing or already approved PCs;
- upgrade of the ten (10) existing IBM PC/XT/ATs or compatibles with the appropriate communications interface to the local processor.

2.1.6 Local Micro-Computer Based Network

While a microcomputer based local area network (LAN) is well suited to meet TDC's Office Automation requirements, it is not the best technical nor the most cost-effective solution for the MIS system. The reasons for this are as follows:

a. Most of the microcomputer-based LANs are presently based on the MS DOS operating system, whereas the TDC solution requires support of the UNIX operating system for the short term migration of the present MIS system to the new hardware. A viable solution, would, therefore, require a Unix-based LAN, such as defined in 2.1.7 below, or a combination of UNIX/PROCOL database and an MS DOS based Ethernet LAN with a gateway between the two. We feel that such a solution would be more complex and inferior in performance to the UNIX based LAN solution outlined below.

b. Due to the inherently greater processing overhead of LANs compared to micro or minicomputers based on distributed processor architecture, the TDC LAN would have to consist of multiple powerful microprocessors to support 18 to 24 concurrent TDC users.

c. Since most of the TDC users require access to the MIS database application, this would require a local copy of the relational database software on each intelligent workstation, and an intelligent workstation for every user who wants to access the MIS database. This would also tend to increase the cost of the LAN solution.

d. The LAN based relational database, office automation and TCN communications software capabilities required by the TDC user environment would be difficult to find in one package. Conversely, even if a LAN software package offering all these capabilities were found, the choice of the solution would be unduly restricted, since this type of technology is still in the evolutionary stage.

The Microprocessor-based LAN solution is illustrated in the configuration diagram in Figure 2.3, and consists of:

- an MS DOS-based LAN/Disk/Print Server microcomputer based on the INTEL 30386 microprocessor, 3 - 4 MIPS, 4 Mbytes main memory, 300 Mbytes of disk storage in 2 drives, and a 60 Mbytes cartridge tape drive;

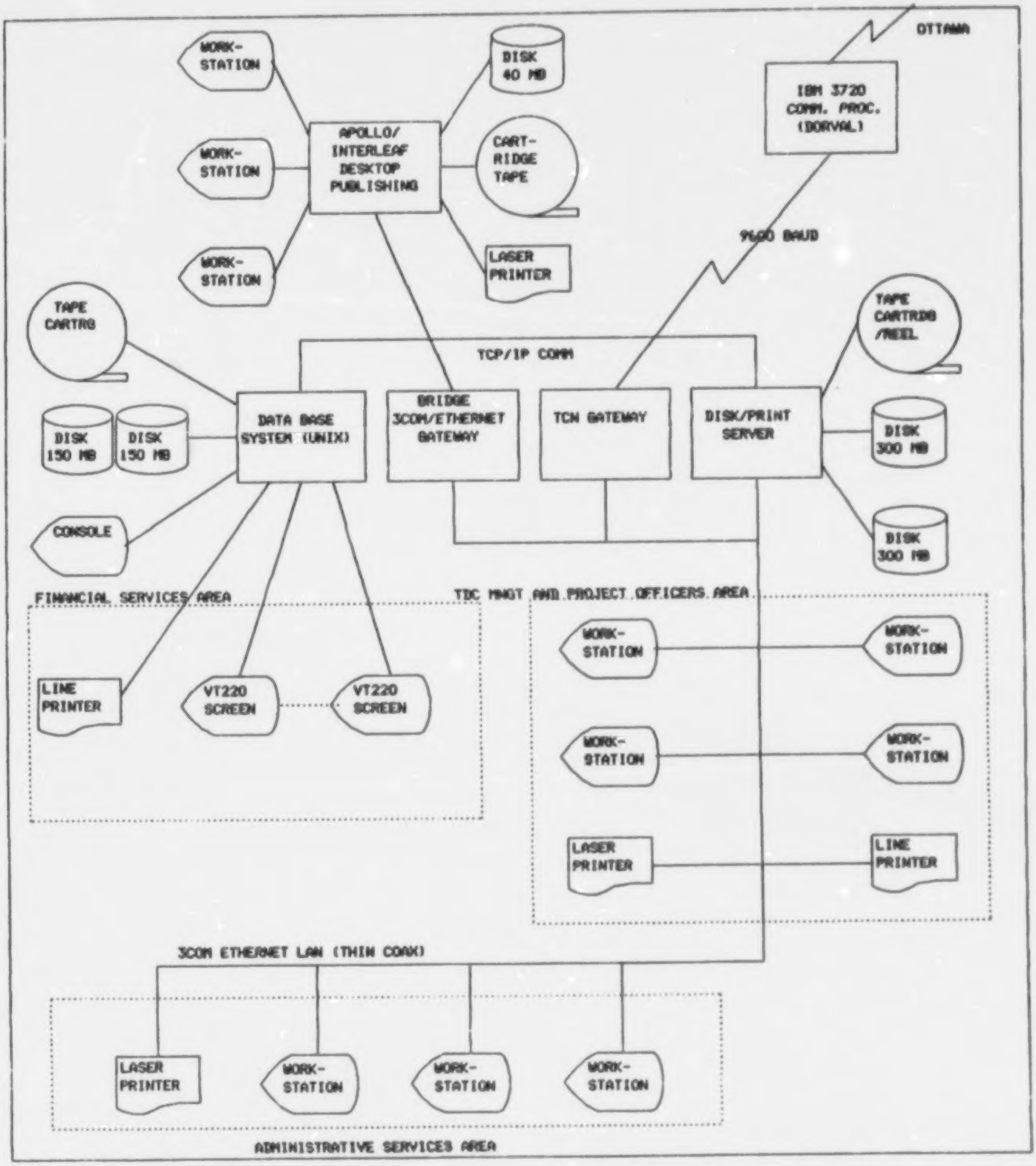
OTTAWA
WORK-STATION
DISK 40 MB
APOLLO/ INTERLEAF DESKTOP PUBLISHING
IBM 3720 COMM. PROC. (DORVAL)
WORK-STATION
CART-RIDGE TAPE
WORK-STATION
LASER PRINTER
9600 BAUD
TAPE CARTRG
TAPE CARTRDG /REEL
TCP/IP COMM
DISK 150 MB
DISK 150 MB
DATA BASE SYSTEM (UNIX)
BRIDGE 3COM/ETHERNET GATEWAY
TCN GATEWAY
DISK/PRINT SERVER
DISK 300 MB
CONSOLE
DISK 300 MB
FINANCIAL SERVICES AREA
TDC MNGT AND PROJECT OFFICERS AREA
WORK-STATION
WORK-STATION
LINE PRINTER
VT220 SCREEN
VT220 SCREEN
WORK-STATION
WORK-STATION
LASER PRINTER
LINE PRINTER
3COM ETHERNET LAN (THIN COAX)
LASER PRINTER
WORK-STATION
WORK-STATION
WORK-STATION
ADMINISTRATIVE SERVICES AREA

FIGURE 2.3 MICROPROCESSOR BASED LAN SOLUTION

2.1.6 Local Micro-Computer Based Network (Cont'd)

- an AT&T 3B2/600 Unix-based minicomputer, 3 - 4 MIPS, 4 Mbytes of memory, 300 Mbytes of disk storage in two drives, and 60 Mbytes cartridge tape drive;

- an MS DOS/Unix Bridge TCP/IP gateway between the 3COM LAN, and the Unix system;

- a gateway to the Transport Canada Network (TCN) based on the IBM SNA, supporting the DISOSS Document Distribution System, and 3270 data stream communications capability for all local CRT terminals and intelligent workstations;

- a gateway to the TDC Interleaf Desktop Publishing system via the Ethernet LAN interface;

- one 9600 baud line between the TDC local processor in Montreal and the Regional Informatics IBM 3720 Communications Processor in Dorval;

- two (2) medium speed, serial dot-matrix printers, 132 columns, 400 CPS, attached via the serial RS422 interface or LAN interface;

- two (2) medium speed, serial laser printers, 80 columns, 10 PPM, attached via the serial RS422 interface or LAN interface;

- thirty (30) additional intelligent workstations, IBM PC/ATs or compatibles, with LAN interface;

- upgrade of the ten (10) existing IBM PC/XT/ATs or compatibles with LAN interface.

2.1.7 Combination of Above (Local Processor and LAN)

The most appropriate combination of above solutions involves the combination of a local processor for the MIS application, and a local area network for the office automation applications. Such a solution implies:

a. a powerful local mini or microcomputer based on the distributed microprocessor architecture, serving as the MIS database machine, and initially the LAN and TCN gateway controller;

   as the processing load of office automation applications grows and eventually exceeds the processing capacity of the MIS processor, additional servers can be added to the network, and the server functions distributed;

b. as the local MIS database machine, the local processor would provide service to all MIS users via directly attached CRT terminals, and intelligent workstations attached via the LAM network, operating in CRT emulation mode;

c. as the LAN controller, the local processor would inter- connect all local intelligent workstations, including the Interleaf Desktop Publishing System, and provide access to the local processor's mass storage and peripherals, and the LAN peripherals;

d. as the TCN gateway controller, the local processor would provide all local users with access to the TCN systems, devices and services, and conversely, the TCN users with access to the TDC MIS application, and TDC LAN;

e. in order to provide the required local processing and communications processing power, the local processor would have to be based on a distributed architecture, providing separate microprocessor based controllers for locally attached CRTs, the LAN controller, and TCN gateway functions.

The TDC local processor/LAN controller/TCN Gateway Controller alternative is illustrated in Figure 2.4, and consists of the following:

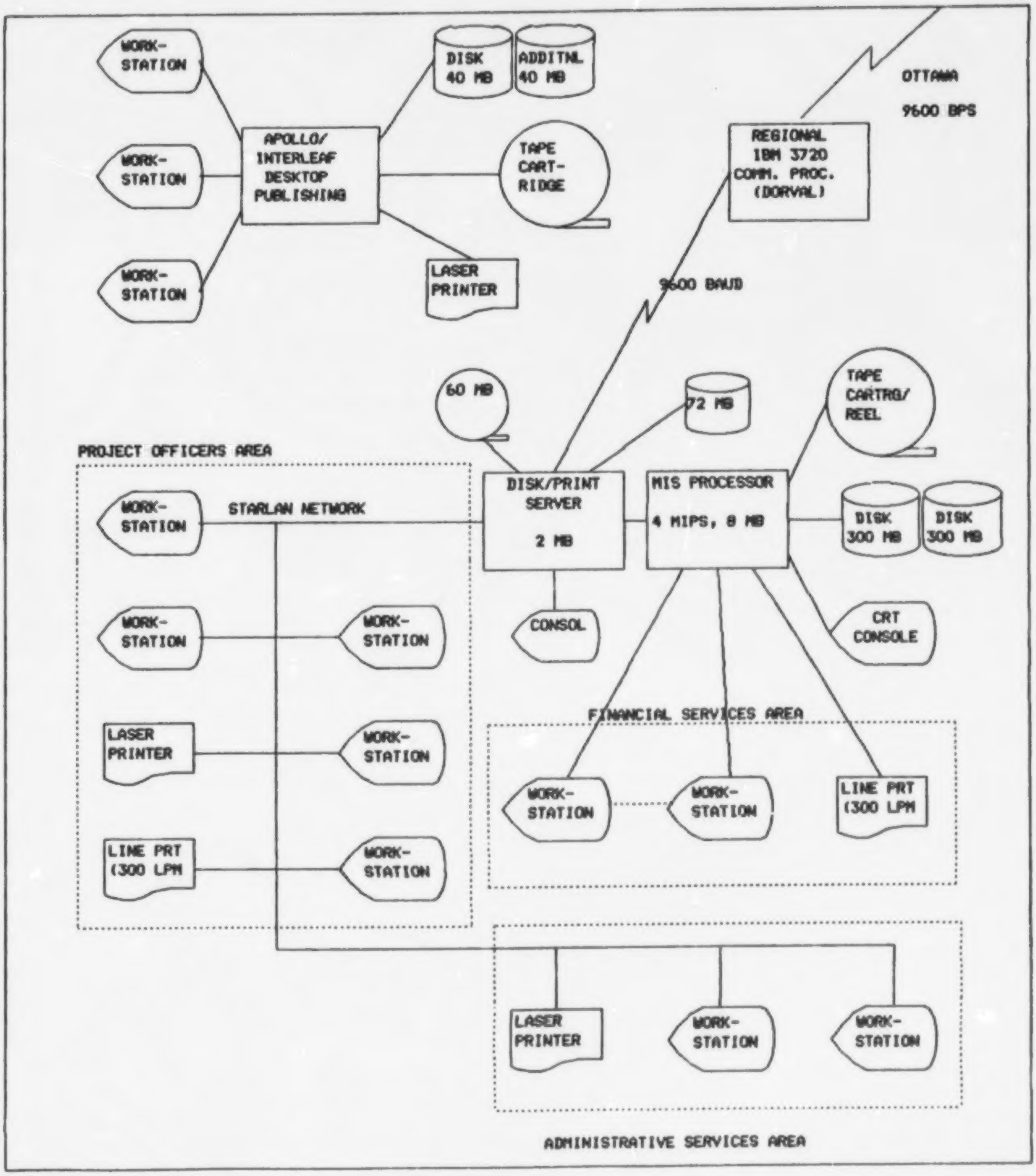
WORK-STATION
DISK 40 MB
ADDITNL 40 MB
OTTAWA
9600 BPS
APOLLO/ INTERLEAF DESKTOP PUBLISHING
TAPE CART-RIDGE
REGIONAL IBM 3720 COMM. PROC. (DORVAL)
WORK-STATION
WORK-STATION
LASER PRINTER
9600 BAUD
60 MB
72 MB
TAPE CARTRG/ REEL
PROJECT OFFICERS AREA
WORK-STATION
STARLAN NETWORK
DISK/PRINT SERVER 2 MB
MIS PROCESSOR 4 MIPS, 8 MB
DISK 300 MB
DISK 300 MB
WORK-STATION
WORK-STATION
CONSOL
CRT CONSOLE
FINANCIAL SERVICES AREA
LASER PRINTER
WORK-STATION
WORK-STATION
WORK-STATION
LINE PRT (300 LPM
LINE PRT (300 LPM
WORK-STATION
LASER PRINTER
WORK-STATION
WORK-STATION
ADMINISTRATIVE SERVICES AREA

FIGURE 2.4 MINICOMPUTER/LOCAL AREA NETWORK SOLUTION

2.1.7 Combination of Above (Local Processor and LAN) (Cont'd)

- a local processor based on 32 bit, distributed processor architecture, providing the processing capacity of 4 million instructions per second (4 MIPS), 8 - 16 Mbytes of main memory (depending on the operating system memory demand, and at least 64 Kbytes of high speed cache memory;

- two disk drives of 600 Mbytes total capacity, expandable to at least 900 Mbytes and three drives, attached via an intelligent disk/tape controller based on a separate microprocessor;

- one 9 track, 6250 BPI magnetic tape unit, or a cartridge tape unit of at least 150 Mbytes capacity per cartridge;

- one local communications controller based on a separate microprocessor, capable of supporting up to twelve (12) local CRT terminals and serial printers via RS422 point-to-point connections, or an equivalent multi-point (daisy chain) hardwired connection;

- a local area network (LAN) controller based on a separate microprocessor, capable of supporting a total of up to 42 intelligent workstations (IBM PC/XT/AT or compatibles) and up to four dot-matrix/dot-band printers, and laser printers;

- a gateway to the Transport Canada Network (TCN) based on the IBM SNA, supporting the DISOSS Document Distribution System, 3270 data stream communications capability for all local CRT terminals and intelligent workstations;

- one 9600 baud line between the TDC local processor in Montreal and the Regional Informatics IBM 3720 Communications Processor in Dorval;

- two (2) medium speed, serial dot-matrix printers, 132 columns, 400 CPS, attached via the serial RS422 interface or LAN interface;

- two (2) medium speed, serial laser printers, 80 columns, 10 PPM, attached via the serial RS422 interface or LAN interface;

2.1.7 Combination of Above (Local Processor and LAN) (Cont'd)

- ten (10) CRT terminals, of which seven (7) terminals for Financial and Administrative Services data entry staff, and three (3) terminals for the Chiefs and Senior Development Officers who have expressed no need for the intelligent workstations;
- twenty one (21) additional intelligent workstations, IBM PC/ATs or compatibles, with LAN interface;
- upgrade of the ten (10) existing IBM PC/XT/ATs or compatibles with LAN interface;
- 40 MB of additional disk space for the Interleaf Desktop Publishing System;
- upgrade of the Interleaf Destop Publishing System with a 4 port Multiplexer for connection of additional data entry/text editing workstations.

2.2 PRELIMINARY EVALUATION OF DESIGN ALTERNATIVES

The purpose of the preliminary evaluation is to examine the compliance of all design alternatives with the mandatory TDC requirements, and eliminate the solutions which do not comply or are unsuitable for other reasons. The following paragraphs outline the reasons for rejecting specific solution alternatives.

2.2.1 Continuing the Status Quo

Continuing the status quo is not a viable alternative, since it does not meet any of the mandatory requirements, namely:

a. the present PDP 11/44 processor architecture can not provide the required service performance levels, can not be effectively integrated with the TCN network, and it can not integrate all local devices and systems into an integrated office automation environment;

b. the present MIS application environment and data base design do not provide a viable basis for addition of the project management capability, nor does it provide an application environment for integration of related applications;

c. the present PROCOL application environment does not meet the requirements of the application environment, nor does it meet the data integrity requirements of the MIS and G/L applications.

For these reasons, continuing the status quo will not be elaborated further.

2.2.2 TCN Mainframe in Ottawa

The mainframe solution is rejected on the following grounds:

a. At least 90 % of TDC processing requirements are of local nature. The exceptions are the DGRD inquiry and reporting capability, the DISOSS compatible electronic mail system, and potential use of TCN applications by TDC users which are provided by all other viable solutions.

2.2.2 TCN Mainframe in Ottawa (Cont'd)

b. Even though the TCN mainframe solution could provide a local area token ring network via the appropriate communications processor(s), the performance of mainframe server would be limited to 9600/19,200 baud communication line, thus offer inherently inferior performance compared to local processing alternatives;

c. The mainframe solution for local processing requirements goes contrary to the DCI and TDC policies and precedents.

Rejection of the mainframe alternative has been authorized by DCI during the preliminary design review meeting in Ottawa, and accepted by TDC project manager.

2.2.3 Using the Regional Informatics Processor in Dorval

The existing IBM 4331 Regional Informatics processor in Dorval is not a viable alternative for the following reasons:

a. The IBM 4331 minicomputer does not have the processing power to support the processing load of the TDC MIS and G/L applications, and provide the required level of performance;

b. The present Regional Informatics applications are running in the IBM SSX operating system environment which does not provide an application development capability;

c. The provide an application development environment, the IBM SSX operating system could be upgraded to DOS/VSE which is not a good long term alternative based on the published IBM product development and support policy.

The following additional considerations were determined during the preliminary DCI design review in Ottawa:

a. Transport Canada Communications and Informatics Group are presently considering the upgrade and configuration of the Regional Informatics processing facilities. A firm technical direction is not known at this time;

2.2.3 Using the Regional Informatics Processor in Dorval (Cont'd)

b. The entire processor, mass storage and peripheral capacity of the present IBM 4331 Regional Informatics processor should be considered committed from the point of view of TDC requirements.

In view of above, the TDC Regional Informatics alternative must be presently based on a separate processor alternative. When the direction of the Regional Informatics processor upgrade is known, the appropriate adjustments will be made by DCI to TDC separate processor configuration, taking into account all savings from sharing the hardware and software facilities, as well as technical and operations support costs.

It follows from above that the Regional Informatics processor alternative from our present standpoint is equivalent to the local TDC processor solution in all respects other than:

- the Regional processor alternative implies a 9600/19,200 baud communication line between TDC LAN/communications processor(s), thus essentially degrading the performance of the local devices or LAN;
- if the TDC processing requirements are to be eventually integrated within the Regional Informatics processor, the choice of technology is restricted by other Regional requirements and DCI technical direction;
- the latter may exclude the medium term solution of porting the existing MIS application to the new hardware.

2.3 COST OF ALTERNATIVES

The following paragraphs summarize the total estimated costs of the alternative solutions which meet all mandatory TDC requirements. The costs of the optimum, recommended solution will later be presented for a time phased implementation plan based on TDC priorities.

2.3.1 Cost Elements Considered

The cost estimates for the alternative viable solutions take into account the following cost elements:

- purchase, installation and maintenance costs of hardware;
- purchase and maintenance costs of the operating system software, communications software, and application packages;
- estimated cost of migration of the existing MIS application to the new hardware;
- estimated development and maintenance costs of the custom MIS application software;
- initial and recurring costs of the communication equipment and lines;
- initial cost of training of the end-user and technical support staff;
- recurring costs of system operations, facilities management and end-user support.

2.3.2 Cost Estimates for Each Alternative

The following cost estimates are based on preliminary quotations and cost estimates provided by the selected industry representative vendors who comply with the TDC mandatory requirements. Please refer to the vendor quotations in Appendix A.

2.3.2.1 Cost of Using the Regional Processor (Dorval)

As outlined in paragraph 2.2.3 above, the design alternative involving the Regional Informatics Processor in Dorval is based on a separate IBM 9370 Model 60 processor, for lack of a published Regional hardware upgrade policy at this time.

Table 2.1 below provides the detailed breakdown of capital and maintenance costs by category, while table 2.2 provides the summary of one time and recurring costs by category for the Regional Processor Alternative.

Table 2.1 Cost of the Regional Processor Solution

Cost Component	Qty	Capital Cost	Annual Maint.
A. **SYSTEM HARDWARE**			
1. IBM 9370 Model 60 CPU, 4 MIPS rating, with 8 MB main memory	1	98,700	5,112
2. 9309-002 1.6 Meter Rack Enclosure	1	3,891	72
3. 6010 DASD/Tape Controller	1	3,196	n/c
4. 9332-400 400 MB Disk Drives	2	36,288	1,008
5. 1600 BPI, 50/100 IPS Tape Drive	1	10,248	1,440
6. 6030 Comm. Controller	1	5,110	n/c
7. 6031 Multi-Protocol, 2 Line Communications Adapter for TCN Gateway, and connection of remote TDC equipment	1	1,276	n/c
8. 3174 Workstation Control Unit for remote support of TDC workstations and peripherals, and Token Ring LAN	1	6,205	315
10. 3191-AIY Display Station	6	6,462	864
11. 4234 Dot Band Printers, 400 LPM, 132 columns	2	22,164	3,024
12. 3812 Model 2 Laser Printer, 12 PPM, 8 1/2 x 11, and 8 1/2 x 14 cut sheet paper feed	1	9,376	1,500
13. Token Ring LAN Adapter	1	5,236	n/c
14. IBM PC/AT compatible micro-computers with 640 KBytes memory and 20 MB hard disk	26	78,000	6,240
15. IBM PC/XT compatible micro-computers with 640 KBytes memory and 20 MB hard disk	4	8,000	800

Table 2.1 Cost of the Regional Processor Solution (Cont'd)

Cost Component	Qty	Capital Cost	Annual Maint.
A. SYSTEM HARDWARE (CONT'D)			
16. Token Ring Adapters for IBM PC/XT/AT and compatibles	26	27,300	n/c
17. Token Ring LAN Adapters for the existing PC/XT/AT and compatibles	10	10,500	n/c
18. LAN Cabling Installation	60	6,000	n/a
19. LAN Cables	36	5,400	n/a
20. 40 Mbytes Additional Hard Drive for Apollo Publishing System	1	2,000	300
21. 4 Port Multiplexer for for Apollo Publishing System	1	2,000	n/a
Hardware Total		347,352	20,675
B. PURCHASED SOFTWARE			
1. 5664-301 VM/IS Operating System Software Package	1	19,097	n/c
2. Option 0981 Additional Graphics Support	1	5,425	n/c
3. 5664-280 ACF/VTAM Version 3.0 Networking Software	1	15,605	n/c
4. 5664-319 VM/PC Host Server	1	3,015	n/c
5. 5664-298 PC Bond Software	1	2,865	n/c
6. 5664-281 VM/SP PC File Transfer	1	866	n/a
7. 75X1085 PC3270 Emulation Program, Entry Level	36	11,340	n/a
8. ORACLE RDBMS Version 5.1	1	43,200	6,750
9. ORACLE SQL *PLUS	1	8,640	1,296

Table 2.1 Cost of the Regional Processor Solution (Cont'd)

Cost Component	Qty	Capital Cost	Annual Maint.
B. PURCHASED SOFTWARE (CONT'D)			
10. ORACLE SQL *FORMS	1	10,800	1,688
11. ORACLE *RPT II Extended Report Writer	1	8,640	1,688
12. ORACLE IBM 3270 Protocol	1	6,480	1,013
13. ORACLE PRO *COBOL LANGUAGE	1	6,480	1,013
14. PROFS Base Version 2 Rel. 2, Document Preparation and Distribution Package	1	17,535	n/a
15. PROFS License for up to 100 users	1	9,000	n/a
16. WordPerfect Word Processing Package for PCs	35	8,750	n/a
17. Timeline Project Management Package for PCs	5	3,000	n/a
18. Lotus 1-2-3 Spreadsheet Package for PCs	7	3,185	n/a
19. Sidekick Plus Personal Productivity package for PCs	36	6,120	n/a
20. Relational Database Package (Oracle for PCs with no support)	5	1,000	n/a
22. SmartCom Communications Package for PCs	22	5,280	n/a
23. IBM AIX Advanced Interactive Executive (Unix) Operating System (for VM host)	1	25,704	n/a
24. C Compiler	1	4,753	n/a
25. PROCOL Unix License	1	15,000	3,000

Table 2.1 Cost of the Regional Processor Solution (Cont'd)

Cost Component	Person Days	Rate/ Day	Total
B. PURCHASED SOFTWARE (CONT'D)			
26. Apollo Workstation Emulation Software for Publishing System	3	3,000	500
Software Total		244,780	16,948
C. COST OF MIS MIGRATION			
1. Porting of Libraries and Database	10	400	4,000
2. Integrated System Test	10	400	4,000
3. Contingencies/Problems	20	400	8,000
4. Modification of User Documentation	10	400	4,000
5. User Training	10	400	4,000
Total	50		24,000
F. COST OF MIS SOFTWARE			
1. SDLC Phase 3 Detailed MIS Analysis	225	418	94,000
2. SDLC Phase 4 MIS Programming and Testing	515	373	192,000
3. SDLC Phase 5 MIS Implementation	125	380	47,500
Total	865	386	333,500
E. COMMUNICATION EQUIPMENT & LINES			
1. Cost of 19,200 BPS line and MODEMS btw. TDC & Dorval for Regional processor alternative	1	700	5,820

Table 2.1 Cost of the Regional Processor Solution (Cont'd)

Cost Component	Number Persons	Days/ Person	Cost/ Day	Total
F. TECHNICAL & USER TRAINING				
1. MIS Support Training				
a. Operating System Basic Training Course	2	5	200	2,000
b. Operating System Programmer Training Course	1	5	200	1,000
c. System Operator Training Course	1	5	200	1,000
d. Relational Database Basic Training Course	2	5	200	2,000
e. Relational Database Programmer Training Course	1	5	200	1,000
f. Communication Subsystems Training Course	2	5	200	2,000
Sub-total				9,000
2. MIS User Training				
Please, refer to SDLC Phase 5, MIS Implementation Costs.	n/a	n/a	n/a	n/a
3. Personal Productivity Tools Training				
a. Word Processing Training Course	35	3	100	10,500
b. Project Management Package Training Course	5	3	100	1,500
c. Electronic Spreadsheet Package Training Course	7	2	100	1,400
d. Relational Database Training Course	5	3	100	1,500

Table 2.1 Cost of the Regional Processor Solution (Cont'd)

Cost Component	Number Persons	Days/ Person	Cost/ Day	Total
e. DISOSS Distribution Services Training Course	6	3	100	1,800
f. Personal Services User Training Course	35	2	100	7,000
g. Local Area Network User Training Course	35	2	100	7,000
h. PC Communication Package Training	22	2	100	4,400
i. Electronic Mail Training Course	35	2	100	7,000
j. Word Processing Advanced Training	7	2	100	1,400
k. Electronic Mail Advanced Training	7	2	100	1,400
l. Personal Services Advanced Training	7	2	100	1,400
Sub-total				46,300
Total				55,300
G. **MIS OPERATIONS AND SUPPORT COSTS**				
1. MIS Manager	1	20 %	70 K	14,000
2. Systems Analyst	1	50 %	45 K	22,500
3. Operator/Programmer	1	50 %	35 K	17,500
Total				54,000

Table 2.2 Cost Summary of the Regional Processor Solution

Cost Component	Capital Cost	Installation Cost	Maintenance Cost
1. System Hardware	347,352	n/a	20,675
2. Purchased/Licensed Software	244,780	n/a	16,948
3. Migration of Existing MIS to New Hardware	24,000	n/a	70,000
		or	
4. MIS Redevelopment and Implementation	333,500	n/a	38,400
5. Communications Equipment and Lines	700	same	5,820
6. User and Technical Staff Training	55,300	n/a	
7. System Operation and Support	n/a	n/a	54,000
TOTAL (Old MIS)	1,005,632	700	167,443
			or
TOTAL (New MIS)			135,843

2.3.2.2 Installing a Local Processor at TDC

Table 2.3 below provides detailed cost estimates,while table 2.4 provides the summary of one time and recurring costs by category of expenditures of installing a local processor at TDC, with direct connection of terminal equipment and peripherals to the CPU (without providing a local area network). The costs are based on prices provided by AT&T Ottawa office. This option would enable TDC to make use of the existing six DEC VT220 terminals and four serial printers.

Table 2.3 Cost of TDC Local Processor Solution

Cost Component	Qty	Capital Cost	Installation	Annual Maint.
A. SYSTEM HARDWARE				
1. 7326-AMA 3B2/600 processor, 2.6 MIPS, 4 MB main memory, 26 RS232 serial ports, 720 KB Flexible Disk Drive, 2 x 147 MB Disk Drives, 60 MB Cartridge Tape Drive, SCSI Host Adapter Interface, Virtual Memory Cache, and UNIX Operating System	1	65,705	1,055	3,984
2. 73273 4 MB ECC RAM Memory Expansion Card,	1	7,065	165	420
3. Multi-Processor Enhancement (increases CPU performance rating to 4 MIPS)	1	6,359	83	504
4. 36020-010 SCSI Intelligent Disk Controller	1	1,837	119	276
5. 36204 300 MB SCSI Disk Drive, 18 msec. access	1	13,779	124	1,104
6. 3344-610 System Console with Display & Keyboard	1	1,237	36	156
7. 73271 Enhanced Serial 8-Port controller	3	5,594	300	540

Table 2.3 Cost of TDC Local Processor Solution (Cont'd)

Cost Component	Qty	Capital Cost	Instal-lation	Annual Maint.
A. SYSTEM HARDWARE (CONT'D)				
8. 3331-495 Laser Printer with	2	6,485	304	2,352
333060 Printer Module	2	1,696	n/a	n/a
9. IBM PC/AT compatible with 640 KB RAM and 20 MB drive	26	78,000	n/a	6,240
10. IBM PC/XT Compatible Micro-computers with 640 KBytes and 20 MB hard drive	4	8,000	n/a	800
11. 7324-A2Q 3B2/600 Computer serving as LAN Server and TCN Gateway, with 2 MB RAM, 720 KB diskette drive, 72 MB hard disk, 60 MB Cartridge Tape, SCSI AT&T Host Adapter, 10 Serial Ports, Cables & Connectors,	1	24,021	669	1,860
12. 73220 Synchronous ISC Controller	1	2,084	46	216
13. 3344-610 System Console with Display & Keyboard	1	1,237	36	156
14. 40 Mbytes Additional Hard Disk Drive for Publishing system	1	2,000	n/c	300
15. 4 Port Multiplexer for Publishing system	1	2,000	n/c	n/a
Total Hardware		227,099	2,937	18,908

Table 2.3 Cost of TDC Local Processor Solution (Cont'd)

Cost Component	Qty	Capital Cost	Installation	Annual Maint.
B. PURCHASED SOFTWARE				
1. 1020-005 Terminal Emulation Software for PCs	36	4,536	1,184	2,592
2. 1070-021 IBM 3270 Terminal Emulation Software	1	6,930	211	1,008
3. ORACLE RDBMS Version 5.1	1	64,800	n/a	10,125
4. ORACLE SQL *PLUS	1	12,960	n/a	2,025
5. ORACLE SQL *FORMS	1	16,200	n/a	2,531
6. ORACLE Easy *SQL	1	12,960	n/a	2,025
7. ORACLE TTY PROTOCOL	1	9,720	n/a	1,518
8. ORACLE PRO *COBOL Language	1	9,720	n/a	1,518
9. 1072-031 AT&T E-Mail (PMXTERM)	1	4,500	n/a	n/a
10. 1040-030 Document Exchange Base System	1	7,619	459	2,268
11. 1040-035 Document Exchange System Utilities for PCs	1	3,807	209	1,260
12. WordPerfect Word Processing Package for PCs	35	8,750	n/a	n/a
13. Timeline Project Management Package for PCs	5	3,000	n/a	n/a
14. Lotus 1-2-3 Spreadsheet Package for PCs	7	3,185	n/a	n/a
15. Sidekick Plus Personal Productivity package for PCs	36	6,120	n/a	n/a
16. Relational Database Package (Oracle for PCs with no support)	5	1,000	n/a	n/a

Table 2.3 Cost of TDC Local Processor Solution (Cont'd)

Cost Component	Qty	Capital Cost	Installation	Annual Maint.
B. PURCHASED SOFTWARE (CONT'D)				
17. Smartcom Communications Software Package for PCs	22	5,280	n/a	n/a
18. C Compiler	1	1,520	n/a	348
19. Advanced Development Utilities	1	895	n/a	252
20. PROCOL License for Unix	1	15,000	n/a	3,000
21. Workstation Emulation Software for Publishing System	1	3,000	n/a	500
Total Software		201,502	2,063	30,970

Table 2.3 Cost of TDC Local Processor Solution (Cont'd)

Cost Component	Person Days	Rate/ Day	Total
C. COST OF MIS MIGRATION			
1. Porting of Libraries and Database	10	400	4,000
2. Integrated System Test	10	400	4,000
3. Contingencies/Problems	10	400	4,000
4. Modification of User Documentation	10	400	4,000
5. User Training	10	400	4,000
Total	50		20,000
D. COST OF MIS SOFTWARE			
1. SDLC Phase 3 Detailed MIS Analysis	225	418	94,000
2. SDLC Phase 4 MIS Programming and Testing	515	373	192,000
3. SDLC Phase 5 MIS Implementation	125	380	47,500
Total	865	386	333,500

Cost Component	Qty	Installation	Annual Rate
E. COMMUNICATION EQUIPMENT & LINES			
1. Cost of 9,600 BPS line and MODEMS btw. TDC & Dorval for the Local Processor alternative	1	600	3,900

Table 2.3 Cost of TDC Local Processor Solution (Cont'd)

Cost Component	Number Persons	Days/ Person	Cost/ Day	Total
F. TECHNICAL & USER TRAINING				
1. MIS Support Training				
a. Operating System Basic Training Course	2	5	200	2,000
b. Operating System Programmer Training Course	1	5	200	1,000
c. System Operator Training Course	1	5	200	1,000
d. Relational Database Basic Training Course	2	5	200	2,000
e. Relational Database Programmer Training Course	1	5	200	1,000
f. Communication Subsystems Training Course	2	5	200	2,000
g. System Administrator Training Course	1	5	300	1,500
Sub-total				10,500

Cost Component	Number Persons	Days/ Person	Cost/ Day	Total
2. MIS User Training				
Please, refer to SDLC, Phase 5, MIS Implementation Costs.	n/a	n/a	n/a	n/a
3. Productivity Tools Training				
a. Word Processing Training Course	35	3	100	10,500
b. Project Management Package Training Course	5	3	100	1,500

Table 2.3 Cost of TDC Local Processor Solution (Cont'd)

Cost Component	Number Persons	Days/ Person	Cost/ Day	Total
F. TECHNICAL & USER TRAINING (CONT'D)				
c. Electronic Spreadsheet Package Training Course	7	2	100	1,400
d. Relational Database Training Course	5	3	100	1,500
e. DISOSS Distribution Services Training Course	6	3	100	1,800
f. Personal Services User Training Course	35	2	100	7,000
g. PC Communication Package Training	22	2	100	4,400
h. Electronic Mail Training Course	35	2	100	7,000
i. Word Processing Advanced Training	7	2	100	1,400
j. Electronic Mail Advanced Training	7	2	100	1,400
k. Personal Services Advanced Training	7	2	100	1,400
Sub-total				39,300
Total				49,800

Cost Component	Number Persons	% Of Time	Annual Cost	Total
G. MIS OPERATIONS AND SUPPORT COSTS				
1. MIS Manager	1	30 %	67 K	20,000
2. Systems Analyst	1	100 %	45 K	45,000
3. Operator/Programmer	1	100 %	35 K	35,000
Sub-total				100,000

Table 2.4 Cost Summary of TDC Local Processor Solution

Cost Component	Capital Cost	Installation Cost	Maintenance Cost
1. System Hardware	227,099	2,937	18,908
2. Purchased Software	201,502	2,063	30,970
3. Migration of Existing MIS to New Hardware	20,000	n/a	70,000
			or
4. MIS Redevelopment and Implementation	333,500	n/a	38,400
5. Communications Equipment and Lines	n/a	600	3,900
6. User and Technical Training	49,800	n/a	n/a
7. System Operation and Support	n/a	n/a	100,000
TOTAL (Old MIS)	831,901	5,600	223,778
			or
TOTAL (New MIS)			192,178

2.3.2.3 Microcomputer Based Local Area Network

The microprocessor-based LAN solutions can be divided into those that use MS DOS operating systems, and those based on UNIX.

The UNIX based LAN solution is fully elaborated in 2.3.2.4 below, except that it is based on proprietary AT&T technology (Western Electric microprocessors) rather than on one of the two industry standard microprocessors (INTEL 80386 and MOTOROLA 68020).

Although the MS DOS based microcomputer LAM solution alone could fully meet the TDC requirements, due to the TDC requirement for intermediate migration of the existing PROCOL-based MIS software to the new hardware, the following solution is based on a combination of:

- 3Com microprocessor based local area network and 3 Plus family of network products based on the MS DOS operating system; and
- AT&T's 3B2/600 Unix based minicomputer serving as the database machine for migration of the existing MIS application, and development of the new enhanced MIS application based on the state-of-the-art relational technology.

Note that this configuration would also provide for use of the existing DEC terminals and serial printers via direct connection to the 26 serial RS232 ports provided by the standard configuration.

Table 2.5 below presents a detailed breakdown of capital and maintenance costs by category, based on the prices provided by LANs PLUS Canada Inc. Ottawa office, while Table 2.6 provides the summary of costs by category.

Table 2.5 Cost of Microcomputer-based LAN

Cost Component	Qty	Capital Cost	Installation	Annual Maint.
A. SYSTEM HARDWARE				
1. Unix Database Machine (AT&T)				
a. 7326-AMA 3B2/600 processor, 2.6 MIPS, 4 MB main memory, 26 RS232 serial ports, 720 KB Flexible Disk Drive, 2 x 147 MB Disk Drives, 60 MB Cartridge Tape Drive, SCSI Host Adapter Interface, Virtual Memory Cache, and UNIX Operating System		65,705	1,055	3,984
b. 73273 4 MB ECC RAM Memory Expansion Card,	1	7,065	165	420
c. 3344-610 System Console with Display & Keyboard	1	1,237	36	156
Sub-total		74,007	1,256	4,560
2. LAN Disk/Print Server				
a. 3Com 3C1205 3S/401 File Server based on Intel 80386 microprocessor, 16 MHz, no wait state (3 - 4 MIPS); - 2 MB RAM, expandable to 14 MB; - 150 MB hard disk; - 150 MB cartridge tape; - 3+Share LAN software providing for multi-user file and spooled printer sharing - 3+Start LAN software, providing for workstation booting across the network	1	16,796	n/a	2,520

Table 2.5 Cost of Microcomputer-based LAN (Cont'd)

Cost Component	Qty	Capital Cost	Instal-lation	Annual Maint.
A. SYSTEM HARDWARE (CONT'D)				
- 3+Back-up software providing for file server back-ups				
b. 3Com 3C1220 150 MB Disk Expansion Unit, including:	1	6,356	n/a	955
- external chassis and power supply for two hard drives;				
- 150 MB additional hard drive;				
- SCSI interface, ports and cables;				
c. 3C588 Multi-connect, Multi-port Ethernet LAN Unit		1,400	n/a	210
d. 3C582 Thin Coaxial Cable Connection Modules for Intelligent Workstations	3	840	n/a	n/a
e. 3331-495 Laser Printer with	2	6,485	304	2,352
333060 Printer Module	2	1,696	n/c	n/c
f. LAN Cabling for 60 connections	60	6,000	n/a	n/a
g. Installation & Configuration of LAN hardware/ software	n/a	n/a	2,000	//a
Sub-total		39,573	2,304	6,037
3. Gateway to TCN				
a. EPEQIII+C40 Epson Equity III+ Microcomputer with 40 MB hard drive	1	3,788	n/a	668
b. MBM2095A Amber Monitor (Optional)	1	192	n/a	n/a

Table 2.5 Cost of Microcomputer-based LAN (Cont'd)

Cost Component	Qty	Capital Cost	Instal-lation	Annual Maint.
A. SYSTEM HARDWARE (CONT'D)				
c. LPSDLC IBM SDLC Adapter Card	1	300	n/a	n/a
Sub-total		4,280	n/a	668
4. Interleaf Ethernet Bridge				
a. LPCS/1 Communications Server 1/SNA, including:	1	14,000	n/a	600
- Ethernet Interface;				
- SIO B.35 communications protocol operating at 64 KBPS;				
- SNA Software;				
- TCP/IP Comm. Protocol;				
b. Ethernet Interface for the Apollo Interleaf System	1	1,000	n/a	215
c. 3C581 Thick Coaxial Cable Connection Module for Apollo Interleaf System	1	220	n/a	n/a
d. 4 Port Multiplexer Upgrade for Interleaf Publishing system	1	2,000	n/a	240
Sub-total		17,220	n/a	1,055
5. Intelligent Workstations				
a. IBM PC/AT compatible with 640 KB RAM and 20 MB drive	26	78,000	n/a	6,240

Table 2.5 Cost of Microcomputer-based LAN (Cont'd)

Cost Component	Qty	Capital Cost	Installation	Annual Maint.
A. SYSTEM HARDWARE (CONT'D)				
b. IBM PC/XT Compatible Microcomputers with 640 Kbytes and 20 MB hard drive	4	8,000	n/a	800
c. Bridge PCS/1 LAN Interface for Intelligent Workstations (26 for the new PCs above, and 10 for existing PCs)	36	51,696	n/a	7,740
d. LAN Cables	36	5,400	n/a	n/a
Subtotal		143,096	n/a	14,780
Total Hardware		278,176	3,560	27,100
B. PURCHASED SOFTWARE				
1. Database Machine Software (AT&T)				
a. ORACLE RDBMS Version 5.1	1	21,600	n/a	3,375
b. ORACLE SQL *PLUS	1	4,320	n/a	675
c. ORACLE SQL *FORMS	1	5,400	n/a	844
d. ORACLE Easy *SQL	1	4,320	n/a	675
e. ORACLE TTY PROTOCOL	1	3,240	n/a	506
f. ORACLE PRO *COBOL Language	1	3,240	n/a	506
g. AT&T C Compiler	1	1,520	n/a	348
h. Advanced Development Utilities	1	895	n/a	252

Table 2.5 Cost of Microcomputer-based LAN (Cont'd)

Cost Component	Qty	Capital Cost	Installation	Annual Maint.
B. PURCHASED SOFTWARE (CONT'D)				
i. PROCOL License for Unix	1	15,000	n/a	3,000
Sub-total		59,535	n/a	10,181
2. LAN Software (3COM)				
a. 3+Mail software license for more than 5 users	1	1,436	n/a	n/a
b. LPAPPC IBM APPC Software	1	160	n/a	n/a
c. LPSNADS SNADS/3+Mail TCN (DISOSS) Gateway Software	1	6,000	n/a	n/a
d. NBSW NetBIOS Emulation Software for PCs	36	3,744	n/a	n/a
e. SNASW 3270 SNA Service Software	6	624	n/a	n/a
f. 3Com Software Support	n/a	n/a	n/a	2,250
Sub-total		11,964	n/a	2,250

* NOTE: Maintenance cost for 3Com software provided by LANs PLUS was quoted at $ 2,250 for ten 1/2 day sessions per year.

Cost Component	Qty	Capital Cost	Installation	Annual Maint.
3. Office Automation & Personal Productivity Software				
a. WordPerfect Word Processing Package for PCs	35	8,750	n/a	n/a
b. Timeline Project Management Package for PCs	5	3,000	n/a	n/a
c. Lotus 1-2-3 Spreadsheet Package for PCs	7	3,185	n/a	n/a
d. Sidekick Plus Personal Productivity Package for PCs	36	6,120	n/a	n/a

Table 2.5 Cost of Microcomputer-based LAN (Cont'd)

Cost Component	Qty	Capital Cost	Installation	Annual Maint.
B. PURCHASED SOFTWARE (CONT'D)				
e. Relational Database Package (Oracle for PCs without support)	5	1,000	n/a	n/a
f. Smartcom Communications Package for PCs	22	5,280	n/a	n/a
g. Interleaf Workstation Emulation Software	3	3,000	n/a	500
Sub-total		30,335	n/a	500
Total Software		101,834	n/a	12,931

Cost Component	Person Days	Rate/Day	Total
C. COST OF MIS MIGRATION			
1. Porting of Libraries and Database	10	400	4,000
2. Integrated System Test	10	400	4,000
3. Contingencies/Problems	10	400	4,000
4. Modification of User Documentation	10	400	4,000
5. User Training	10	400	4,000
Total Migration	50		20,000

Table 2.5 Cost of Microcomputer-based LAN (Cont'd)

Cost Component	Person Days	Rate/ Day	Total
D. COST OF MIS SOFTWARE			
1. SDLC Phase 3 Detailed MIS Analysis	225	418	94,000
2. SDLC Phase 4 MIS Programming and Testing	515	373	192,000
3. SDLC Phase 5 MIS Implementation	125	380	47,500
Total MIS Software	865		333,500

Cost Component	Qty	Installation	Annual Maint.
E. COMMUNICATION EQUIPMENT & LINES			
1. Cost of 9,600 BPS line and MODEMS btw. TDC & Dorval for the Local Processor alternative	1	600	3,900

Cost Component	Number Persons	Days/ Person	Cost/ Day	Total
F. TECHNICAL & USER TRAINING				
1. MIS Support Training				
a. Operating System Basic Training Course	2	5	200	2,000
b. Operating System Programmer Training Course	1	5	200	1,000
c. System Operator Training Course	1	5	200	1,000
d. Relational Database Basic Training Course	2	5	200	2,000
e. Relational Database Programmer Training Course	1	5	200	1,000

Table 2.5 Cost of Microcomputer-based LAN (Cont'd)

Cost Component	Number Persons	Days/ Person	Cost/ Day	Total
F. TECHNICAL & USER TRAINING (CONT'D)				
f. Communication Subsystems Training Course	2	5	200	2,000
g. System Administrator Training Course	1	5	300	1,500
Sub-total				10,500
2. MIS User Training				
Please, refer to SDLC Phase 5, MIS Implementation Costs.	n/a	n/a	n/a	n/a
3. Productivity Tools Training				
a. Word Processing Training Course	35	3	100	10,500
b. Project Management Package Training Course	5	3	100	1,500
c. Electronic Spreadsheet Package Training Course	7	2	100	1,400
d. Relational Database Training Course	5	3	100	1,500
e. DISOSS Distribution Services Training Course	6	3	100	1,800
f. Personal Services User Training Course	36	2	100	7,200
g. Local Area Network User Training Course	36	2	100	7,200
h. PC Communication Package Training	22	2	100	4,400

Table 2.5 Cost of Microcomputer-based LAN (Cont'd)

Cost Component	Number Persons	Days/ Person	Cost/ Day	Total
i. Electronic Mail Training Course	7	2	100	1,400
j. Word Processing Advanced Training	7	2	100	1,400
k. Electronic Mail Advanced Training	7	2	100	1,400
l. Personal Services Advanced Training	7	2	100	1,400
Sub-total				41,100
Total				51,600

Cost Component	Number Persons	% Of Time	Annual Cost	Total
G. MIS OPERATIONS AND SUPPORT COSTS				
1. MIS Manager	1	30 %	67 K	20,000
2. Systems Analyst	1	100 %	45 K	45,000
3. Operator/Programmer	1	100 %	35 K	35,000
Total Support Cost				100,000

Table 2.6 Cost Summary of Microcomputer-based LAN Solution

Cost Component	Capital Cost	Installation Cost	Maintenance Cost
1. System Hardware	278,176	3,560	27,100
2. Purchased Software	101,834	n/a	12,931
3. Migration of Existing MIS to New Hardware	20,000	n/a	70,000 or
4. MIS Redevelopment and Implementation	333,500	n/a	38,400
5. Communications Equipment and Lines	n/a	600	3,900
6. User and Technical Staff Training	51,600	n/a	n/a
7. System Operation and Support	n/a	n/a	100,000
TOTAL (Old MIS)	785,110	4,160	213,931 or
TOTAL (New MIS)			182,331

2.3.2.4 Combination of Above (Local Processor and LAN)

Table 2.7 provides the detailed breakdown of costs by category, while table 2.8 provides summary of capital and recurring costs by category of installing a minicomputer-based TDC Local Area Network based on the AT&T 3B2/600 processor and Unix operating system.

The LAN would interconnect all the existing and the proposed TDC intelligent workstations and the existing Desktop Publishing System, and provide the file transfer and peripheral sharing capability, as well as the native terminal emulation mode for access to the MIS application, and IBM 3270 workstation emulation mode for access of the TCN applications via the IBM host communications interface.

The processor would also provide for use of the existing DEC terminals and serial printers via direct connection to the 26 serial RS232 ports provided by the standard configuration.

Table 2.7 Cost of Local Processor/LAN Solution

Cost Component	Qty	Capital Cost	Installation	Annual Maint.
A. SYSTEM HARDWARE				
1. 7326-AMA 3B2/600 processor, 2.6 MIPS, 4 MB main memory, 26 RS232 serial ports, 720 KB Flexible Disk Drive, 2 x 147 MB Disk Drives, 60 MB Cartridge Tape Drive, SCSI Host Adapter Interface, Virtual Memory Cache, and UNIX Operating System	1	65,705	1,055	3,984
2. 73273 4 MB ECC RAM Memory Expansion Card,	1	7,065	165	420
3. Multi-Processor Enhancement (increases performance rating to 4 MIPS)	1	6,359	83	504
4. 36020-010 SCSI Intelligent Disk Controller	1	1,837	119	276
5. 36204 300 MB SCSI Disk Drive, 18 msec. access	1	13,779	124	1,104
6. 3344-610 System Console with Display & Keyboard	1	1,237	36	156
7. 2614-300 STARLAN Network Access Unit	1	995	50	180
8. 2610-001 STARLAN Network Extender Unit	4	3,252	128	528
9. 3331-495 Laser Printer with 333060 Printer Module	2 2	6,485 1,696	304 n/c	2,352 n/c
10. IBM PC/AT compatible with 640 KB RAM and 20 MB drive	26	78,000	n/a	6,240
11. IBM PC/XT Compatibles with 640 Kbytes and 20 MB hard disk drive	4	8,000	n/a	800
12. STARLAN Access Unit for PCs	36	20,476	2,628	3,024

Table 2.7 Cost of Local Processor/LAN Solution (Cont'd)

Cost Component	Qty	Capital Cost	Installation	Annual Maint.
A. SYSTEM HARDWARE (CONT'D)				
13. 7324-A2Q 3B2/600 Computer serving as LAN Server and TCN Gateway, with 2 MB RAM, 720 KB diskette drive, 72 MB hard disk, 60 MB Cartridge Tape, SCSI Host Adapter, 10 Serial Ports, Cables & Connectors,	1	24,021	669	1,860
14. 73220 Synchronous ISC Controller	1	2,084	46	216
15. 3344-610 System Console with Display & Keyboard	1	1,237	36	156
16. 40 Mbytes Additional Disk Drive for Interleaf Publishing system	1	2,000	n/a	300
17. 4 Port Multiplexer for Interleaf Publishing system	16	2,000	n/a	n/a
Total Hardware		246,228	5,443	22,100
B. PURCHASED SOFTWARE				
1. AT&T Software				
a. 1020-005 Terminal Emulation Software	36	4,536	1,184	2,592
b. 1040-S01 STARLAN Network Program	1	995	50	180
c. 1040-S02 STARLAN Server Program	1	620	64	300
d. 1041-431 STARLAN Network Utilities	1	179	46	84

Table 2.7 Cost of Local Processor/LAN Solution (Cont'd)

Cost Component	Qty	Capital Cost	Installation	Annual Maint.
e. 1020-S20 50-Copy STARLAN License	1	3,774	1,834	n/a
B. PURCHASED SOFTWARE (CONT'D)				
f. 1070-021 IBM 3270 Terminal Emulation Software	1	6,930	211	1,008
g. 1072-031 AT&T E-Mail (PMXTERM)	1	4,500	n/a	n/a
h. 1040-030 Document Exchange Base System	1	7,619	459	2,268
i. 1040-035 Document Exchange System Utilities	1	3,807	209	1,260
j. AT&T C Compiler	1	1,520	n/a	348
k. Advanced Development Utilities	1	895	n/a	252
l. PROCOL License for Unix	1	15,000	n/a	3,000
Sub-total		50,375	4,057	11,292
2. Oracle RDBMS Software				
a. ORACLE RDBMS Version 5.1	1	64,800	n/a	10,125
b. ORACLE SQL *PLUS	1	12,960	n/a	2,025
c. ORACLE SQL *FORMS	1	16,200	n/a	2,531
d. ORACLE Easy *SQL	1	12,960	n/a	2,025
e. ORACLE TTY PROTOCOL	1	9,720	n/a	1,518
f. ORACLE PRO *COBOL Language	1	9,720	n/a	1,518
Sub-total		126,360	n/a	19,742

Table 2.7 Cost of Local Processor/LAN Solution (Cont'd)

Cost Component	Qty	Capital Cost	Installation	Annual Maint.
3. Office Automation & Personal Productivity Software				
a. WordPerfect Word Processing Package for PCs	35	8,750	n/a	n/a
b. Timeline Project Management Package for PCs	5	3,000	n/a	n/a
c. Lotus 1-2-3 Spreadsheet Package for PCs	7	3,185	n/a	n/a
d. Sidekick Plus Personal Productivity Package for PCs	36	6,120	n/a	n/a
e. Relational Database Package (Oracle for PCs without support)	5	1,000	n/a	n/a
f. Smartcom Communications Package for PCs	22	5,280	n/a	n/a
g. Workstation Emulation Software for Interleaf Publishing System	3	3,000	n/a	500
Sub-total		30,335	n/a	500
Total Software		207,070	4,057	31,534

Table 2.7 Cost of Local Processor/LAN Solution (Cont'd)

Cost Component	Person Days	Rate/ Day	Total
C. COST OF MIS MIGRATION			
1. Porting of Libraries and Database	10	400	4,000
2. Integrated System Test	10	400	4,000
3. Contingencies/Problems	10	400	4,000
4. Modification of User Documentation	10	400	4,000
5. User Training	10	400	4,000
Total	50		20,000
D. COST OF MIS SOFTWARE			
1. SDLC Phase 3 Detailed MIS Analysis	225	418	94,000
2. SDLC Phase 4 MIS Programming and Testing	515	373	192,000
3. SDLC Phase 5 MIS Implementation	125	380	47,500
Total	865	386	333,500

Cost Component	Qty	Capital Cost	Instal- lation	Annual Maint.
E. COMMUNICATION EQUIPMENT & LINES				
1. Cost of 9600 BPS line btw. TDC & Dorval for local processor alternative	1	n/a	600	3,900

Table 2.7 Cost of Local Processor/LAN Solution (Cont'd)

Cost Component	Number Persons	Days/ Person	Cost/ Day	Total
F. TECHNICAL & USER TRAINING				
1. MIS Support Training				
a. Operating System Basic Training Course	2	5	200	2,000
b. Operating System Programmer Training Course	1	5	200	1,000
c. System Operator Training Course	1	5	200	1,000
d. Relational Database Basic Training Course	2	5	200	2,000
e. Relational Database Programmer Training Course	1	5	200	1,000
f. Communication Subsystems Training Course	2	5	200	2,000
g. System Administrator Training Course	1	5	300	1,500
Sub-total				10,500
2. MIS User Training				
Please, refer to SDLC Phase 5, MIS Implementation Costs.	n/a	n/a	n/a	n/a
3. Productivity Tools Training				
a. Word Processing Training Course	35	3	100	10,500
b. Project Management Package Training Course	5	3	100	1,500
c. Electronic Spreadsheet Package Training Course	7	2	100	1,400

Table 2.7 Cost of Local Processor/LAN Solution (Cont'd)

Cost Component	Number Persons	Days/ Person	Cost/ Day	Total
F. TECHNICAL & USER TRAINING (CONT'D)				
d. Relational Database Training Course	5	3	100	1,500
e. DISOSS Distribution Services Training Course	6	3	100	1,800
f. Personal Services User Training Course	36	2	100	7,200
g. Local Area Network User Training Course	36	2	100	7,200
h. PC Communication Package Training	22	2	100	4,400
i. Electronic Mail Training Course	7	2	100	1,400
j. Word Processing Advanced Training	7	2	100	1,400
k. Electronic Mail Advanced Training	7	2	100	1,400
l. Personal Services Advanced Training	7	2	100	1,400
Sub-total				41,100
Total Training				51,600

Cost Component	Number Persons	% of Time	Cost/ Year	Actual Cost/Y
G. MIS OPERATIONS AND SUPPORT COSTS				
1. MIS Manager	1	30 %	67 K	20,000
2. Systems Analyst	1	100 %	45 K	45,000
3. Operator/Programmer	1	100 %	35 K	35,000
Sub-total				100,000

Table 2.8 Cost Summary of Local Processor/LAN Solution

Cost Component	Capital Cost	Installation Cost	Maintenance Cost
1. System Hardware	246,228	5,443	22,100
2. Purchased Software	207,070	4,057	31,534
3. Migration of Existing MIS to New Hardware	20,000	n/a	70,000
4. MIS Redevelopment and Implementation	333,500	n/a	38,400
5. Communications Equipment and Lines	n/a	600	3,900
6. User and Technical Staff Training	51,600	n/a	n/a
7. System Operation and Support	n/a	n/a	100,000
TOTAL (Old MIS)	858,398	10,100	227,534
			or
TOTAL (New MIS)			195,934

2.4 IMPLEMENTATION PLANS AND SCHEDULES

The implementation plans and schedules presented here are based on TDC implementation priorities as defined by the Executive Director of TDC, Mr. Rudback, and summarized here:

1) Replace the existing obsolete PDP 11/44 system hardware and software with state-of-the-art equipment which will provide:

    a. the capability to migrate the existing MIS system to the new hardware without modifications, and provide the required level of performance in medium term until the MIS application is redeveloped;

    b. the support of the existing six ASCII CRT terminals and 4 printers via the RS 232 connections;

    c. the required devices, processing capacity, and development environment for support of the MIS redevelopment and implementation activities.

2) Integrate all TDC information systems and office automation devices into a TDC Local Area Network, and provide a gateway to TCN which will support up to 64 existing and future TDC intelligent workstations (microcomputers) used as:

    a. MIS terminals in the native MIS CRT terminal emulation mode;

    b. IBM 3270 terminals accessing the TCN DISOSS document distribution services via the TCN gateway;

    c. independent processors transferring files and sharing the LAN and MIS system peripherals.

3) Provide the TDC Project Officers with a set of effective hardware/software tools for planning, monitoring and analysis of the R&D Projects via:

    a. an improved MIS Project Management Subsystem based on SQL relational technology which meets the basic functional requirements of all Project Officers, Chiefs and Modal Coordinators, and;

2.4 IMPLEMENTATION PLANS AND SCHEDULES (CONT'D)

   b. intelligent workstations (microprocessors) connected to the TDC LAN, and a set of software packages capable of exchanging data between themselves and with the MIS environment.

4) Upgrade the performance and maintainability of the existing Mailing List and Library Acquisition Systems via:

   a. upgrading the existing IBM PC/XT processor and 20 MB hard disk to an IBM PC/XT processor and fast 40 MB hard disk;

   b. conversion of the existing application software from the Informix and C environment to Informix-SQL environment.

5) Upgrade the existing single user Apollo 3000 based Desktop Publishing System for three additional on-line users via:

   a. integrating the Apollo processor with the TDC LAN via an Ethernet gateway to TDC LAN supporting file transfer between LAN PCs and MIS system;

   b. Addition of three low cost intelligent workstations (IBM PC compatible microcomputers) via additional RS 232 serial ports and Emulation Software provided by the Interleaf vendor.

6) Provide the local electronic mail and document storage and retrieval capability to all intelligent workstation users connected to the TDC LAN. The electronic mail software must:

   a. provide for exchange of documents with the TCN DISOSS distribution services based on the IBM Document Content Architecture (DCA) for Fixed Format Text (FFT) and Modifiable Format Text (MFT);

   b. Provide sufficient functionality for automation of TDC R&D Project Procedures.

2.4.1 Implementation Planning Considerations

In addition to the TDC implementation priorities outlined above, the following implementation planning considerations have been taken into account:

- the need for a phased implementation based on the annual availability of funding;

2.4.1 Implementation Planning Considerations (Cont'd)

- the ability of the TDC organization to assimilate the changes in technology and procedures;
- the estimated MIS development lead times based on the SDLC procedures;
- the DSS procurement procedures and the resulting lead times.

2.4.1.1 MIS Development Time Estimates

The MIS redevelopment estimates are based on the following assumptions:

- the detailed functional analysis and programming activities will take full advantage of the SQL-based relational database environment and a full set of 4GL productivity tools;
- the detailed analysis (SDLC Phase 3), and programming and implementation activities (SDLC Phases 4 and 5) will be contracted separately, and both will be preceded by a 6 month project definition, authorization and contracting period;
- the size of the MIS system including the G/L and all related subsystems is estimated at 30 data tables, 60 on-line programs, and 200 reports.

Table 2.9 below summarizes our MIS redevelopment time estimates.

Table 2.9 MIS Redevelopment Time Estimates

Activity	Person Days	Project Team Size	Elapsed Time
Phase 3: Detailed Analysis			
Project management	25	n/a	
Database design	40	2	20
On-line screen formats	60	2	25
Report formats	100	2	50
Sub-total	225		95
Phase 4: Programming			
Project management	35	n/a	
Data dictionary & database	30	2	15
Menu system	20	2	10
On-line programs	120	4	30
Report programs	150	4	40
Documentation	120	3	40
Integrated System Test	30	2	15
System Acceptance Test	10	2	5
Sub-total	515		155

Table 2.9 **MIS Redevelopment Time Estimates** (Cont'd)

Activity	Person Days	Project Team Size	Elapsed Time
Phase 5: Implementation			
Project management	15	n/a	
Data conversion & load	40	2	20
System installation	10	2	5
User training	20	2	10
Parallel test	40	1	40
Sub-total	125		75
Total	865		325

2.4.1.2 MIS Redevelopment Cost Estimates

The following MIS development cost estimates are based on the assumptions that it would be based on competitive bids and Federal or Provincial standing offer rates. Table 2.10 shows the breakdown of development costs by SDLC phases and human resources.

Table 2.10 MIS Redevelopment Cost Estimates

Activity	Days	Level	Rate	Total
Phase 3: Detailed Analysis				
Project management	25	PM	600	15,000
Database design	40	PL	500	20,000
On-line screen formats	60	AN	400	24,000
Report formats	100	A/P	350	35,000
Sub-total		225		$94,000
Phase 4: Programming & Testing				
Project management	35	PM	600	21,000
Data dictionary & database	30	PL	500	15,000
Menu system	20	A/P	350	7,000
On-line programs	120	A/P	350	42,000
Report programs	150	P/A	300	45,000
Documentation	120	A/P	350	42,000
Integrated System Test	30	PL/AN	500	15,000
System Acceptance Test	10	PL/AN	500	5,000
Sub-total		515		$192,000

Legend:
PM - Project Manager
PL - Project Leader
AN - Systems Analyst
A/P - Analyst/Programmer
A/P - Analyst Programmer

Table 2.10 MIS Redevelopment Cost Estimates (Cont'd)

Activity	Days	Level	Rate	Total
Phase 5: Implementation				
Project management	15	PM	600	9,000
Data conversion & load	40	A/P	350	14,000
System installation	10	A/P	350	3,500
User training	20	A/P	350	7,000
Parallel test	40	A/P	350	14,000
Sub-total		125		$47,500
Total		865		$335,500

2.4.2 Implementation Plan for Each Alternative

The following paragraphs provide implementation plans and schedules for each alternative, based on the implementation planning assumptions outlined in paragraph 2.4.1 above, and the MIS development time estimates outlined in paragraph 2.4.1.1 above. The implementation times are presented in terms of tables showing implementation activities, lead times, and costs by activity, and the graphic schedules using Gant charts.

2.4.2.1 Using Transport Canada's Local Processor in Dorval

Table 2.11 shows the detailed implementation activities, times and costs by implementation phases for the Local Processor (Dorval) alternative, while table 2.12 provides a summary of implementation times and costs.

Table 2.11 Regional Processor (Dorval) Time and Cost Estimates

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
1. Initial Hardware & Software Procurement	6			
a. Hardware:				
- IBM 9370 Model 60 CPU, 4 MIPS rating, with 8 MB main memory		1	98,700	5,112
- 9309-002 1.6 Meter Rack Enclosure		1	3,891	72
- 6010 DASD/Tape Controller		1	3,196	n/c
- 9332-400 400 MB Disk Drives		2	36,288	1,008
- 1600 BPI, 50/100 IPS Tape Drive		1	10,248	1,440
- 6030 Comm. Controller		1	5,110	n/c
- 6031 Multi-Protocol, 2 Line Communications Adapter for TCN Gateway, and connection of remote TDC equipment		1	1,276	n/c
- 3174 Workstation Control Unit for remote support of TDC workstations and peripherals, and Token Ring LAN		1	6,205	315
- Token Ring LAN Adapter		1	5,236	n/c
- 3191-AIY Display Station		6	6,462	864
- 4234 Dot Band Printers, 400 LPM, 132 columns		2	22,164	3,024
Sub-total			198,776	11,835

Table 2.11 Regional Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
b. Software:				
- 5664-301 VM/IS Operating System Software Package		1	19,097	n/c
- 5664-280 ACF/VTAM Version 3.0 Networking Software		1	15,605	n/c
- 5664-319 VM/PC Host Server		1	3,015	n/c
- 5664-298 PC Bond Software		1	2,865	n/c
- 5664-281 VM/SP PC File Transfer		1	866	n/a
Sub-total			41,448	n/a
c. Communication Hardware and Software				
- 19,200 bits/sec line and MODEMs between Dorval and TDC		1	700	5,820
Total			240,924	17,655
2. MIS Detailed Analysis, (SDLC Phase 3) procurement	3		n/a	n/a
3. MIS Detailed Analysis, (SDLC Phase 3) project execution	6		94,000	n/a

Table 2.11 Regional Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
4. Phase I Hardware & Software Installation at TDC	1			
a. Token Ring LAN Wiring (60 ports)		60	6,000	n/a
b. Technical Support Training				
- Operating System Basic Training Course		2	2,000	n/a
- System Operator Training Course		1	1,000	n/a
- Communication Subsystems Training Course		2	2,000	n/a
Sub-total			5,000	n/a
Total			11,000	n/a
5. Migration of the existing MIS to the new TDC hardware/software	3			
a. Unix Guest Operating System Software Environment				
- IBM Interactive Executive for VM Operating System		1	25,704	n/a
- C Compiler		1	4,753	n/a
- PROCOL License		1	15,000	3,000
Sub-total			45,457	3,000

Table 2.11 **Regional Processor Time and Cost Estimates** (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
b. MIS Conversion and Migration				

- Porting of Libraomparative costs of the four alternative solutions versus specific TDC user requirements based on TDC priorities.

Table 3.5 provides a cost summary, including the capital and annual operations and maintenance expenditures, for the four alternative soluti1000 n /a

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
Total			69,457	73,000

NOTE: An additional 10 days allowed for contingencies/problems due to the new Unix operating system environment.

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
6. Implementation of DISOSS services for EDTDC & Chiefs	2			
a. Hardware:				
- IBM PC/AT compatibles with 640 KBytes and 20 MB hard disk		4	12,000	960
- Token Ring LAN Adapters IBM PC/XT/AT		6	6,300	n/c
- LAN Cables		6	900	n/a
Sub-total			19,200	960
b. Software:				

0 120 20
(Mbytes)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
7. Magnetic Tape Data	90	-10	120	0 150

Table 2.11 Regional Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
c. Training:				
- DISOSS Training		6	1,800	n/a
Total			22,890	960
7. MIS Development & Implementation, SDLC Phase 4 & 5 Procurement	3			
a. Development Hardware				
- 4 IBM PCs with Token Ring Adapters and PC 3270 Emulation Software				
NOTE: These PCs are accounted for under the Project Officers' Productivity Tools in (10) below.				
b. Purchased Software:				
- ORACLE RDBMS Version 5.1		1	43,200	6,750
- ORACLE SQL *PLUS		1	8,640	1,296
- ORACLE SQL *FORMS		1	10,800	1,688
- ORACLE *RPT II Extended Report Writer		1	8,640	1,688
- ORACLE IBM 3270 PROTOCOL		1	6,480	1,013
- ORACLE PRO *COBOL LANGUAGE		1	6,480	1,013
Total			84,240	13,448

Table 2.11 Regional Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
8. MIS Development, SDLC Phase 4 Project Execution	9			
a. Technical Training:				
- Relational Database Basic Training Course		2	2,000	n/a
- Operating System Programmer Training Course		1	1,000	n/a
- Relational Database Programmer's Training Course		1	1,000	n/a
			4,000	n/a
b. Development:				
- SDLC Phase 4 MIS Programming and Testing		515	192,000	38,400
Total			196,000	38,400
9. MIS Implementation, SDLC Phase 5 Project Execution	4	125	47,500	n/a
10. Implementation of Project Officers' Productivity Tools	12			
a. Hardware				
- IBM PC/AT compatible micro-computers with 640 KBytes memory and 20 MB hard disk		17	51,000	4,080
- Token Ring LAN Adapters for IBM PC/XT/AT and compatibles		21	22,050	n/c
- LAN Cables		21	3,150	n/a
Sub-total			76,200	4,080

Table 2.11 Regional Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
b. Software				
- IBM 5664 Option 0981 Additional Graphics Support		1	5,425	n/c
- IBM 75X-1085 PC/3270 Emulation Software		21	6,615	n/c
- Wordperfect Word Processing Package		26	6,500	n/a
- Timeline Project Management Package		5	3,000	n/a
- Lotus 1-2-3 Electronic Spreadsheet		5	2,275	n/a
- Sidekick Plus Personal Productivity Software		27	4,590	n/a
- Relational Database Package (Oracle for PCs without support		5	1,000	n/a
- Smartcom Communications Software Package		22	5,280	n/a
Sub-total			34,685	n/a
c. Training Courses				
- Word Processing Package Basic Training		26	7,800	n/a
- Local Area Network User Training Course		26	5,200	n/a
- Project Management Package Training Course		5	1,500	n/a
- Electronic Spreadsheet Package Training Course		5	1,000	n/a

Table 2.11 Regional Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- Relational Database Training Course		5	1,500	n/a
- Personal Services User Training Course		26	5,200	n/a
- PC Communications Package Training Course		22	4,400	n/a
- Electronic Mail Training Course		26	5,200	n/a
Sub-total			31,800	n/a
Total			142,685	4,080
11. TDC Library Systems Upgrade	6			
- Exchange of an existing IBM PC/XT with 640 K RAM and 20 MB hard Drive for an AT compatible with 1 Mbytes RAM and fast 40 MB hard drive		1	3,000	240
- Addition of an IBM PC/AT compatible with 640 K RAM and 20 MB hard drive		1	3,000	240
- Upgrade of the existing Library Mailing List and Acquisition Applications to Informix/SQL by internal TDC support resources		60	n/c	n/c
Sub-total			6,000	480

Table 2.11 Regional Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
12. Office Automation Hardware & Software Procurement	3			
a. Hardware				
- IBM PC/XT compatibles with 640 KBytes and 20 MB hard disk		4	8,000	800
- Token Ring LAN Adapters IBM PC/XT/AT		7	7,350	n/c
- LAN Cables		7	1,050	n/a
- 3812 Model 2 Laser Printer, 12 PPM, 8 1/2 x 11, and 8 1/2 x 14 cut sheet paper feed		1	9,376	1,500
Sub-total			25,776	2,300
b. Software				
- PROFS Base Version 2 Rel. 2, Document Preparation and Distribution Package		1	17,535	n/a
- PROFS License for up to 100 users		1	9,000	n/a
- IBM 75X-1085 PC/3270 Emulation Software		7	2,205	n/c
- WordPerfect (or equivalent) word processing package		7	1,750	n/a
- Personal Services Software Package (Sidekick)		7	1,190	n/a
Sub-total			31,680	n/a
Total			57,456	2,300

Table 2.11 Regional Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
13. Office Automation Implementation	9			
a. Basic User Training				
- Word Processing Package Basic Training		7	300	2,100
- Local Area Network User Training Course		7	200	1,400
- Electronic Mail Basic Training Course		7	200	1,400
- Personal Services Basic Training Course		7	200	1,400
Sub-total				6,300
b. Advanced User Training				
- Word Processing Package Advanced Training		7	200	1,400
- Electronic Mail Advanced Training Course		7	200	1,400
- Personal Services Advanced Training Course		7	100	1,400
Sub-total				4,200
Total				10,500

Table 2.11 Regional Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
14. Upgrade of TDC Desktop Publishing System	3			
a. Hardware				
- 40 Mbytes additional hard disk drive		1	2,000	300
- 4 Port Multiplexer for Apollo processor		1	2,000	n/a
- IBM PC/AT compatible with 640 KB RAM		1	3,000	240
Sub-total			7,000	540
b. Software				
- Apollo Workstation Emulation Program for two existing IBM PC/3270s and one IBM PC/AT compatible		3	3,000	500
Total			10,000	1,040
15. Intelligent Workstations for Financial and Administrative Services Managers	3			
a. Hardware				
- IBM PC/AT compatibles with 640 KBytes and 20 MB hard disk		2	6,000	480
- Token Ring LAN Adapters IBM PC/XT/AT		2	2,100	n/c
- LAN Cables		2	300	n/a
Sub-total			8,400	480

Table 2.11 Regional Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
b. Software				
- IBM 75X-1085 PC/3270 Emulation Software		2	630	n/c
- WordPerfect (or equivalent) word processing package		2	500	n/a
- Lotus 1-2-3 Electronic Spreadsheet		2	910	n/a
- Sidekick Plus Personal Productivity Software		2	340	n/a
Sub-total			2,380	n/a
c. Training				
- Word Processing Package Basic Training		2	600	n/a
- Local Area Network User Training Course		2	400	n/a
- Electronic Spreadsheet Training Course		2	400	n/a
- Personal Services Basic Training Course		2	400	n/a
- Electronic Mail Training Course		2	400	n/a
Sub-total			2,200	n/a
Total			12,980	480

Table 2.11 Regional Processor Time and Cost Estimates (Cont'd)

Cost Component	Number Persons	% Of Time	Annual Cost	Total
16. Operations & Support Costs	12			
- Regional MIS Manager		20 %	70 K	14,000
- Regional Systems Analyst		50 %	45 K	22,500
- Regional Operator		50 %	35 K	17,500
Sub-total				54,000

Table 2.12 Summary of Regional Processor Time and Cost Estimates

Implementation Activity	Time Mths	Capital Cost	Maint. Cost
1. Phase I Hardware & Software procurement & delivery Total Hardware & Software	6	240,924	17,655
2. MIS Detailed Analysis, (SDLC Phase 3) procurement	3	n/a	n/a
3. MIS Detailed Analysis, SDLC Phase 3 Project Execution	6	94,000	n/a
4. Phase I Hardware & Software installation at TDC	1	11,000	n/a
5. Migration of the Existing MIS to new hardware/software	3	69,457	73,000
6. Implementation of DISOSS services for EDTDC & Division Chiefs	2	22,890	960
7. MIS Development & Implementation, SDLC Phase 4 & 5 Procurement	3	84,240	13,448
8. MIS Development, SDLC Phase 4 Project Execution	9	196,000	38,400
9. MIS Implementation, SDLC Phase 5 Project Execution	4	47,500	n/a
10. Implementation of Project Officers' Productivity Tools	12	142,685	4,080
11. TDC Library Systems Upgrade	6	6,000	480
12. Office Automation Hardware & Software Procurement	3	57,456	2,300
13. Office Automation Implementation	9	10,500	n/a
14. Upgrade of TDC Desktop Publishing System	3	10,000	1,040

Table 2.12 Summary of Regional Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Capital Cost	Maint. Cost
15. Intelligent Workstations for Financial and Administrative Services Managers	3	12,790	480
16. TDC Support Staff	n/a	n/a	54,000
Total (Old MIS)		1,005,632	167,443
			or
Total (New MIS)			135,843

2.4.2.2 Installing a Local Processor at TDC

Table 2.13 provides the detailed implementation activities, times and costs by implementation phases for the TDC local processor solution without a local area network, while table 2.14 provides a summary of the implementation times and costs.

Table 2.13 Local Processor Time and Cost Estimates

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
1. Initial Hardware & Software Procurement & Delivery	6			
- 7326-AMA 3B2/600 processor, 2.6 MIPS, 4 MB main memory, 26 RS232 serial ports, 720 KB Flexible Disk Drive, 2 x 147 MB Disk Drives, 60 MB Cartridge Tape Drive, SCSI Host Adapter Interface, Virtual Memory Cache, and UNIX Operating System		1	66,760	3,984
- 3344-610 System Console with Display & Keyboard		1	1,273	156
Total			68,033	4,140
2. MIS Detailed Analysis, (SDLC Phase 3) Procurement	3	n/a	n/a	n/a
3. MIS Detailed Analysis, SDLC Phase 3 project execution	6			
- Cost of Detailed Analysis Contract		225	94,000	n/a
4. Phase I Hardware & Software installation at TDC	1			
a. Hardware installation (included in hardware cost)		n/a	n/a	n/a
b. Software installation (included in software cost)		n/a	n/a	n/a
c. Cabling installation (use existing cabling)		n/a	n/a	n/a

Table 2.13 Local Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
d. TDC Technical Support Training				
- Operating System Basic Training Course		2	2,000	n/a
- System Operator Training Course		1	1,000	n/a
- System Administration Course		1	1,500	n/a
- Communication Subsystems Training Course		2	2,000	n/a
Total			6,500	n/a
5. Migration of the existing MIS to the new TDC hardware/software	3			
a. Development Software Procurement				
- AT&T C Compiler		1	1,520	348
- Advanced Development Utilities		1	895	252
- PROCOL License		1	15,000	3,000
Sub-total			17,415	3,600
b. Conversion and Migration				
- Porting of Libraries and Database		10	4,000	n/a
- Integrated System Test		10	4,000	n/a
- Contingencies/Problems		10	4,000	n/a
- Modification of User Documentation		10	4,000	n/a

Table 2.13 Local Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- User Training		10	4,000	n/a
Sub-total		40	20,000	70,000
Total			37,415	73,600
6. Implementation of DISOSS services for EDTDC & Division Chiefs	2			
a. Hardware				
- IBM PC/AT compatible with 640 KB RAM and 20 MB drive		4	12,000	960
- 73220 Synchronous ISC Controller		1	2,130	216
Sub-total			14,130	1,176
b. Software				
- 1070-021 IBM 3270 Terminal Emulation Software		1	7,141	1,008
- 1020-005 Terminal Emulation Software		6	954	432
			8,095	1,440
c. Communication Lines & Modems				
- Cost of 9,600 BPS line and MODEMS between TDC & Dorval		1	600	3,900
d. User Training				
- DISOSS User Training		6	1,800	n/a
Total			24,625	6,516

Table 2.13 Local Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
7. MIS Redevelopment & Implementation, SDLC Phase 4 & 5 Procurement	3			
a. Hardware				
- 73273 4 MB ECC RAM Memory Expansion Card (to upgrade to a total of 8 Mbytes)		1	7,230	420
- Multi-Processor Enhancement (increases CPU performance rating to 4 MIPS)		1	6,442	504
Sub-total			13,672	924
b. Purchased RDBMS & 4GL Software				
- ORACLE RDBMS Version 5.1		1	64,800	10,125
- ORACLE SQL *PLUS		1	12,960	2,025
- ORACLE SQL *FORMS		1	16,200	2,531
- ORACLE Easy *SQL		1	12,960	2,025
- ORACLE TTY PROTOCOL		1	9,720	1,518
- ORACLE PRO *COBOL Language		1	9,720	1,518
Sub-total			126,360	19,742
c. Development Hardware				
- 4 IBM PCs with Terminal Emulation Software				
NOTE: These PCs are counted under Project Officers' Productivity Tools in (10) below.				
Total			140,032	20,666

Table 2.13 Local Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
8. MIS Development, SDLC Phase 4 Project Execution				
a. Cost of Development Contract, for Programming and Testing		515	192,000	n/a
b. TDC Development Training				
- Relational Database Basic Training Course		2	2,000	n/a
- System Programmer Training Course		1	1,000	n/a
- Relational Database Programmer Training Course		1	1,000	n/a
Sub-total			4,000	n/a
Total			196,000	n/a
9. MIS Implementation, SDLC Phase	5			
- Cost of MIS Implementation Project Contract		125	47,500	38,400
10. Implementation of Project Officers' Productivity Tools	12			
a. Minicomputer Hardware & Software				
- 36020-010 SCSI Intelligent Disk Controller		1	1,956	276
- 36204 300 MB SCSIO Disk Drive, 18 msec. access		1	13,903	1,104
- 73271 Enhanced Serial 8-Port controller		3	5,894	540

Table 2.13 Local Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- IBM PC/AT compatible with 640 KB RAM and 20 MB drive		17	51,000	4,080
- 1020-005 Terminal Emulation Software for PCs		21	3,339	1,512
Sub-total			76,092	7,512
b. PC Productivity Tools Software				
- WordPerfect Word Processing Package for PCs		26	6,500	n/a
- Timeline Project Management Package for PCs		5	3,000	n/a
- Lotus 1-2-3 Spreadsheet Package for PCs		5	2,275	n/a
- Relational Database Package (Oracle for PCs without support)		5	1,000	n/a
- Sidekick Plus Personal Productivity package for PCs		27	4,590	n/a
- Smartcom Communications Package for PCs		22	5,280	n/a
Sub-total			22,645	n/a
c. Productivity Tools Training				
- Word Processor Basic Training Course		26	7,800	n/a
- Project Management Package Training Course		5	1,500	n/a
- Electronic Spreadsheet Package Training Course		5	1,000	n/a

Table 2.13 Local Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- Relational Database Training Course		5	1,500	n/a
- Personal Services User Training Course		26	5,200	n/a
- PC Communications Package Training Course		22	4,400	n/a
- Electronic Mail User Training Course		26	5,200	n/a
Sub-total			26,600	n/a
Total			125,337	7,512
11. TDC Library Systems Upgrade	6			
- Exchange of an existing IBM PC/XT with 640 K RAM and 20 MB hard Drive for an AT compatible with 1 Mbytes RAM and fast 40 MB hard drive		1	3,000	240
- Addition of an IBM PC/AT compatible with 640 K RAM and 20 MB hard drive		1	3,000	240
- Upgrade of the existing Library Mailing List and Acquisition Applications to Informix/SQL by internal TDC support resources		60	n/c	n/c
Total			6,000	480

Table 2.13 Local Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
12. Office Automation Hardware & Software Procurement	3			
a. Hardware				
- 7324-A2Q 3B2/600 Computer serving as TCN Gateway with 2 MB RAM, 720 KB diskette drive, 72 MB hard disk, 60 MB Cartridge Tape, SCSI AT&T Host Adapter, 10 Serial Ports, Cables & Connectors,		1	24,690	1,860
- 3344-610 System Console with Display & Keyboard		1	1,273	156
- 3331-495 Laser Printer with		2	6,789	2,352
333060 Printer Module		2	1,696	n/c
- IBM PC/XT compatible personal computers with 640 Kbytes memory and 20 MB hard drive		4	8,000	800
Sub-total			42,448	5,168
b. Software				
- 1020-005 Terminal Emulation software for PCs		7	1,113	504
- 1072-031 AT&T E-Mail (PMXTERM)		1	4,500	n/a
- 1040-030 Document Exchange Base System		1	8,078	2,268
- 1040-035 Document Exchange System Utilities		1	4,016	1,260
- Word Processing Package		7	1,750	n/a

Table 2.13 Local Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- Personal Services Package		7	1,190	n/a
Sub-total			20,647	4,032
Total			63,095	9,200
13. Office Automation Implementation	9			
a. Basic User Training				
- Word Processing Package Basic Training	3	7	2,100	n/a
- Electronic Mail Basic Training Course		7	1,400	n/a
- Personal Services Basic Training Course		7	1,400	n/a
Sub-total			4,900	n/a
b. Advanced User Training	6			
- Word Processing Package Advanced Training		7	1,400	n/a
- Electronic Mail Advanced Training Course		7	1,400	n/a
- Personal Services Advanced Training Course		7	1,400	n/a
Sub-total			4,200	n/a
Total			9,100	n/a

Table 2.13 Local Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
14. Upgrade of TDC Desktop Publishing System	3			
a. Hardware				
- 40 Mbytes additional hard disk drive		1	2,000	300
- 4 Port Multiplexer for Apollo processor		1	2,000	n/a
- IBM PC/AT compatible with 640 KB RAM		1	3,000	240
Sub-total			7,000	540
b. Software				
- Apollo Workstation Emulation Program for two existing IBM PC/3270s and one IBM PC/AT compatible		3	3,000	500
Total			10,000	1,040
15. Intelligent Workstations for Financial and Administrative Services Managers	3			
- IBM PC/AT compatibles with 640 KBytes and 20 MB hard disk		2	6,000	480
b. Software				
- 1020-005 Terminal Emulation Software for PCs		2	318	144
- WordPerfect (or equivalent) word processing package		2	500	n/a

Table 2.13 Local Processor Time and Cost Estimates (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- Lotus 1-2-3 Electronic Spreadsheet		2	910	n/a
- Sidekick Plus Personal Productivity Software		2	340	n/a
Sub-total			2,068	144
c. Training				
- Word Processing Package Basic Training		2	600	n/a
- Electronic Spreadsheet Training Course		2	400	n/a
- Electronic Mail Basic Training Course		2	400	n/a
- Personal Services Basic Training Course		2	400	n/a
Sub-total			1,800	n/a

Tional environment could be operated and technically supported by the TCN (Ottawa) operators and technical support specialists, while the MIS and Office Automation application and end-user support could be provided by the Dorval Regional Informatics Group o n/a 45,000

- TDC Operator/Programmer	100 %		n/a	35,000
Sub-total				100,000

Table 2.14 Summary of Local Processor Time and Cost Estimates

Implementation Activity	Time Mths	Capital Cost	Maint. Cost
1. System Hardware & Software	6	68,033	4,140
2. MIS Detailed Analysis, (SDLC Phase 3) procurement	3	n/a	n/a
3. MIS Detailed Analysis, SDLC Phase 3 project execution	6	94,000	n/a
4. Phase I Hardware & Software installation at TDC	1	6,500	n/a
5. Migration of the existing MIS to new TDC hardware/software	3	37,415	73,600
6. Implementation of DISOSS services for EDTDC & Division Chiefs	2	24,625	6,516
7. MIS Development & Implementation, SDLC Phase 4 & 5 procurement	3	140,032	20,666
8. MIS Development, SDLC Phase 4 project execution	9	196,000	n/a
9. MIS Implementation, SDLC Phase 5 project execution	4	47,500	38,400
10. Implementation of Project Officers' productivity tools	12	125,337	7,512
11. TDC Library Systems Upgrade	12	6,000	480
12. Office Automation hardware & software procurement	3	63,095	9,200
13. Office Automation Implementation	9	9,100	n/a
14. Upgrade of TDC Desktop Publishing System	3	10,000	1,040

Table 2.14 Summary of Local Processor Time and Cost Estimates

Implementation Activity	Time Mths	Capital Cost	Maint. Cost
15. Intelligent Workstations for Financial and Administrative Services Managers	3	9,868	624
16. TDC Support Personnel	12	n/a	100,000
TOTAL (Old MIS)		837,505	223,778
			or
TOTAL (New MIS)			192,178

2.3.2.3 Microcomputer-Based Local Area Network

The microprocessor-based LAN solutions presented here include one that uses the MS DOS operating systems, and one based on UNIX.

The UNIX based LAN solution is fully elaborated in 2.3.2.4 below, except that it is based on proprietary AT&T technology (Western Electric microprocessors) rather than on one of the two industry standard microprocessors (INTEL 80386 and MOTOROLA 68020).

The MS DOS LAN solution elaborated here is based on a combination of:

- AT&T 3B2/600 Unix based database system for migration and support of the existing PROCOL-based MIS application software, and development of the proposed new MIS application; and
- 3Com 3-Plus family of network products which have been fully tested by Transport Canada DCI for compatibility with the TCN network standards. The two systems are interconnected via the TCP/IP protocol.

Table 2.15 shows the detailed implementation times and costs by implementation phase, while table 2.16 provides the summary of implementation times and costs.

Table 2.15 Time and Cost Estimates for Microcomputer LAN

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
1. Initial Hardware & Software	6			
a. Unix Database Machine (AT&T)				
- 7326-AMA 3B2/600 processor, 2.6 MIPS, 4 MB main memory, 26 RS232 serial ports, 720 KB Flexible Disk Drive, 2 x 147 MB Disk Drives, 60 MB Cartridge Tape Drive, SCSI Host Adapter Interface, Virtual Memory Cache, and UNIX Operating System		1	66,760	3,984
- 73273 4 MB ECC RAM Memory Expansion Card,		1	7,230	420
- 3344-610 System Console with Display & Keyboard		1	1,273	156
Sub-total			75,263	4,560
b. LAN Disk/Print Server				
- 3Com 3C1205 3S/401 File Server based on Intel 80386 microprocessor, 16 MHz, no wait state (3 - 4 MIPS);		1	16,796	2,520
* 2 MB RAM, expandable to 14 MB;				
* 150 MB hard disk;				
* 150 MB cartridge tape;				
* 3+Share LAN software providing for multi-user file and spooled printer sharing				

Table 2.15 Time and Cost Estimates for Microcomputer LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
* 3+Start LAN software, providing for workstation booting across the network				
* 3+Back-up software providing for file server back-ups				
- 3Com 3C1220 150 MB Disk Expansion Unit, including:		1	6,356	955
* external chassis and power supply for two hard drives;				
* 150 MB additional hard drive;				
* SCSI interface, ports and cables;				
- 3C588 Multi-connect, Multi-port Ethernet LAN Unit		1	1,400	210
- 3C582 Thin Coaxial Cable Connection Modules for Intelligent Workstations		3	840	n/a
- 3+Mail software license for more than 5 users		1	1,436	n/a
- 3Com software support *			n/a	2,250
Sub-total			26,828	5,935
Total			102,091	10,495

* NOTE: Maintenance cost for 3Com software provided by LANs PLUS was quoted at $ 2,250 for ten 1/2 day sessions per year.

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
2. MIS Detailed Analysis, (SDLC Phase 3) Procurement	3	n/a	n/a	n/a
3. MIS Detailed Analysis, SDLC Phase 3 project execution	6			
- Cost of Detailed Analysis Contract		225	94,000	n/a

Table 2.15 Time and Cost Estimates for Microcomputer LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
4. Phase I Hardware & Software Installation at TDC	1			
a. Installation and configuration of LAN hardware and software (person-days)		2	2,000	n/a
b. LAN Cabling Installation (60 ports)		n/a	6,000	n/a
c. TDC Technical Support Training				
- Operating System Basic Training Course		2	2,000	n/a
- System Operator Training Course		1	1,000	n/a
- System Administration Course		1	1,500	n/a
- Communication Subsystems Training Course		2	2,000	n/a
Sub-total			6,500	n/a
Total			14,500	n/a
5. Migration of the existing MIS to new TDC hardware/software	3			
a. Software Procurement				
- AT&T C Compiler		1	1,520	348
- Advanced Development Utilities		1	895	252
- PROCOL License		1	15,000	3,000
Sub-total			17,415	3,600

Table 2.15 Time and Cost Estimates for Microcomputer LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
b. MIS Conversion and Migration				
- Porting of Libraries and Database		10	4,000	n/a
- Integrated System Test		10	4,000	n/a
- Contingencies/Problems		10	4,000	n/a
- Modification of User Documentation		10	4,000	n/a
- MIS User Training		10	4,000	n/a
Sub-total		50	20,000	70,000
Total			37,415	73,600
6. Implementation of DISOSS services for EDTDC & Division Chiefs	2			
a. Gateway to TCN				
- EPEQIII+C40 Epson Equity III+ Microcomputer with 40 MB hard drive		1	3,788	668
- MBM2095A Amber Monitor (Optional)		1	192	n/a
- LPSDLC IBM SDLC Adapter Card		1	300	n/a
- LPAPPC IBM APPC Software		1	160	n/a
- LPSNADS SNADS/3+Mail TCN (DISOSS) Gateway Software		1	6,000	n/a
Sub-total			10,440	668

Table 2.15 Time and Cost Estimates for Microcomputer LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
b. Intelligent Workstations				
- IBM PC/AT compatible with 640 KB RAM and 20 MB drive		4	12,000	960
- Bridge PCS/1 LAN Interfaces for Intelligent Workstations		6	8,616	1,290
- LAN Cable Assembly & Testing		6	900	n/a
Sub-total			21,516	2,250
c. Software				
- NBSW NetBIOS Emulation Software for PCs		6	624	n/a
- SNASW 3270 SNA Service Software		6	624	n/a
Sub-total			1,248	n/a
d. Communications Equipment and Lines				
- Cost of 9,600 BPS line and MODEMS btw. TDC & Dorval for the Local Processor alternative		1	600	3,900
e. User Training				
- LAN User Training		6	1,200	n/a
- DISOSS User Training		6	1,800	n/a
Sub-total			3,000	n/a
Total			36,804	6,818

Table 2.15 Time and Cost Estimates for Microcomputer LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
7. MIS Redevelopment & Implementation, SDLC Phase 4 & 5 Procurement	3			
a. Development Hardware				
- 4 IBM PCs with LAN Interfaces and NetBIOS Emulation Software				
NOTE: These PCs are accounted for under the Project Officers' Productivity Tools in (10) below.				
b. RDBMS & 4GL Software				
- ORACLE RDBMS Version 5.1		1	21,600	3,375
- ORACLE SQL *PLUS		1	4,320	675
- ORACLE SQL *FORMS		1	5,400	844
- ORACLE Easy *SQL		1	4,320	675
- ORACLE TTY PROTOCOL		1	3,240	506
- ORACLE PRO *COBOL Language		1	3,240	506
Total			42,120	6,581
8. MIS Development, SDLC Phase 4 Project Execution	9			
a. Cost of Development Contract for Programming and Testing		515	192,000	38,400
b. TDC Technical Training				
- System Programmer Training Course		1	1,000	n/a

Table 2.15 Time and Cost Estimates for Microcomputer LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- Relational Database Basic Training Course		2	2,000	n/a
- Relational Database Programmer Training Course		1	1,000	n/a
Sub-total			4,000	n/a
Total			196,000	n/a
9. MIS Implementation, SDLC Phase 5	4			
- Cost of MIS Implementation Project Contract		125	47,500	38,400
10. Implementation of Project Officers' Productivity Tools	12			
a. Intelligent Workstations				
- IBM PC/AT compatible with 640 KB RAM and 20 MB drive		17	51,000	4,080
- Bridge PCS/1 LAN Interface for Intelligent Workstations (26 for the new PCs above, and 10 for existing PCs)		21	30,156	4,515
- LAN Cables		21	3,150	n/a
Sub-total			84,306	8,595
b. Software				
- NBSW NetBIOS Emulation Software for PCs		21	2,184	n/a
- WordPerfect Word Processing Package for PCs		26	6,500	n/a

Table 2.15 Time and Cost Estimates for Microcomputer LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- Timeline Project Management Package for PCs		5	3,000	n/a
- Lotus 1-2-3 Spreadsheet Package for PCs		5	2,275	n/a
- Relational Database Package (Oracle for PCs with no support)		5	1,000	n/a
- Sidekick Plus Personal Productivity package for PCs		27	4,590	n/a
- Smartcom Communications Package for PCs		22	5,280	n/a
Sub-total			24,829	n/a
c. Productivity Tools Training				
- LAN Training Course		21	4,200	n/a
- Word Processor Basic Training Course		26	7,800	n/a
- Project Management Package Training Course		5	1,500	n/a
- Electronic Spreadsheet Package Training Course		5	1,000	n/a
- Relational Database Training Course		5	1,500	n/a
- Personal Services User Training Course		27	5,400	n/a
- Communications Package Training Course		22	4,400	n/a
Sub-total			25,800	n/a
Total			134,935	8,595

Table 2.15 Time and Cost Estimates for Microcomputer LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
11. TDC Library Systems Upgrade	6			
- Exchange of an existing IBM PC/XT with 640 K RAM and 20 MB hard Drive for an AT compatible with 1 Mbytes RAM and fast 40 MB hard drive		1	3,000	240
- Addition of an IBM PC/AT compatible with 640 K RAM and 20 MB hard drive		1	3,000	240
- Upgrade of the existing Library Mailing List and Acquisition Applications to Informix/SQL by internal TDC support resources		60	n/c	n/c
Sub-total			6,000	480
12. Office Automation Hardware & Software Procurement	3			
a. Hardware				
- IBM PC/XT Compatible microcomputers with 640 Kbytes memory and 20 MB hard drive		4	8,000	800
- Bridge PCS/1 LAN Interface for Intelligent Workstations		7	10,052	1,505
- LAN Cable Assembly & Testing		7	1,050	n/a
- 3331-495 Laser Printer with		2	6,789	2,352
333060 Printer Module		2	1,696	n/c
Sub-total			27,587	4,657
b. Software				
- NBSW NetBIOS Emulation Software for PCs		7	728	n/a

Table 2.15 Time and Cost Estimates for Microcomputer LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- Word Processing Package		7	1,750	n/a
- Sidekick Personal Services Software		7	1,190	n/a
Sub-total			3,668	n/a
Total			31,255	4,657
13. Office Automation Implementation	9			
a. Basic User Training	3			
- Word Processing Package Basic Training		7	2,100	n/a
- Local Area Network Basic User Training Course		7	1,400	n/a
- Electronic Mail Basic Training Course		7	1,400	n/a
- Personal Services Basic Training Course		7	1,400	n/a
Sub-total			6,300	n/a
b. Advanced User Training	6			
- Word Processing Package Advanced Training		7	1,400	n/a
- Electronic Mail Advanced Training Course		7	1,400	n/a
- Personal Services Advanced Training Course		7	2,100	n/a
Sub-total			4,200	n/a
Total			10,500	n/a

Table 2.15 Time and Cost Estimates for Microcomputer LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
14. Upgrade of TDC Desktop Publishing System	3			
a. Interleaf Ethernet Bridge				
- LPCS/1 Communications Server 1/SNA, including:		1	14,000	600
* Ethernet Interface;				
* SIO B.35 communications protocol operating at 64 KBPS;				
* SNA Software;				
* TCP/IP comm. protocol;				
- Ethernet Interface for the Apollo Interleaf System		1	1,000	215
- 3C581 Thick Coaxial Cable Connection Module for Apollo Interleaf System		1	220	n/a
- 4 Port Multiplexer for the Apollo Processor		1	2,000	240
- IBM PC/AT compatible with 640 KB RAM		1	3,000	240
Sub-total			20,220	1,295
b. Software				
- Apollo Workstation Emulation Program for two existing IBM PC/3270s and one IBM PC/AT compatible		3	3,000	500
Total			23,220	1,795

Table 2.15 Time and Cost Estimates for Microcomputer LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
15. Intelligent Workstations for Financial and Administrative Services Managers	3			
a. Intelligent Workstations				
- IBM PC/AT compatibles with 640 KB memory and 20 MB hard disk		2	6,000	480
- Bridge PCS/1 LAN Interface for Intelligent Workstations		2	2,872	430
- LAN Cable Assembly & Testing		2	300	n/a
Sub-total			9,172	910
b. Software				
- NetBIOS Terminal Emulation Software for PCs		2	208	n/a
- WordPerfect (or equivalent) word processing package		2	500	n/a
- Lotus 1-2-3 Electronic Spreadsheet		2	910	n/a
- Sidekick Plus Personal Productivity Software		2	340	n/a
Sub-total			1,958	n/a
c. Training				
- Word Processing Package Basic Training		2	600	n/a
- Electronic Spreadsheet Training Course		2	400	n/a
- Local Area Network User Training Course		2	400	n/a

Table 2.15 Time and Cost Estimates for Microcomputer LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- Electronic Mail Basic Training Course		2	400	n/a
- Personal Services Basic Training Course		2	400	n/a
Sub-total			1,800	n/a
Total			12,930	910

Implementation Activity	Time Mths	% of Time	Full Cost	TDC Cost
16. Cost of Support Personnel	12			
- TDC MIS Manager		30 %	n/a	20,000
- TDC Systems Analyst		100 %	n/a	45,000
- TDC Operator/Programmer		100 %	n/a	35,000
Sub-total				100,000

Table 2.16 Summary of Time and Cost Estimates for Microcomputer LAN

Implementation Activity	Time Mths	Capital Cost	Maint. Cost
1. Initial System Hardware & Software	6	102,091	10,495
2. MIS Detailed Analysis, (SDLC Phase 3) procurement	3	n/a	n/a
3. MIS Detailed Analysis, SDLC Phase 3 project execution	6	94,000	n/a
4. Phase I Hardware & Software installation at TDC	1	14,500	n/a
5. Migration of the existing MIS to new TDC hardware/software	3	37,415	73,600
6. Implementation of DISOSS services for EDTDC & Division Chiefs	2	36,804	6,818
7. MIS Development & Implementation, SDLC Phase 4 & 5 procurement	3	42,120	6,581
8. MIS Development, SDLC Phase 4 project execution	9	196,000	n/a
9. MIS Implementation, SDLC Phase 5 project execution	4	47,500	38,400
10. Implementation of Project Officers' productivity tools	12	134,935	8,595
11. TDC Library Systems Upgrade	6	6,000	480
12. Office Automation hardware & software procurement	3	31,255	4,657
13. Office Automation Implementation	9	10,500	n/a
14. Upgrade of TDC Desktop Publishing System	3	23,220	1,795
15. Intelligent Workstations for Financial & Administrative Services Managers	3	12,930	910

Table 2.16 Summary of Time and Cost Estimates for Microcomputer LAN (Cont'd)

Implementation Activity	Time Mths	Capital Cost	Maint. Cost
16. TDC Support Personnel Costs	12	n/a	100,000
TOTAL (Old MIS)		789,270	213,931
			or
TOTAL (New MIS)			182,331

2.4.2.4 Combination of Above (Local Processor and LAN)

Table 2.17 provides the detailed implementation times and costs by TDC implementation phases for the combination of the TDC local processor and LAN solution based on the AT&T proprietary, Unix based technology, while table 2.18 provides the summary of implementation times and costs.

The LAN would interconnect all the existing and proposed TDC intelligent workstations, and provide a gateways to TCN and the TDC Publishing system.

The processor would also provide for use of the existing DEC terminals and serial printers via direct connection to the 26 serial RS232 ports provided by the standard AT&T 3B2/600 hardware configuration.

Table 2.17 Time and Cost Estimates for Local Processor/LAN

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
1. Initial Hardware & Software Procurement	6			
a. Hardware				
- 7326-AMA 3B2/600 processor, 2.6 MIPS, 4 MB main memory, 26 RS232 serial ports, 720 KB Flexible Disk Drive, 2 x 147 MB Disk Drives, 60 MB Cartridge Tape Drive, SCSI Host Adapter Interface, Virtual Memory Cache, and UNIX Operating System		1	66,760	3,984
- 73273 4 MB ECC RAM Memory Expansion Card,		1	7,230	420
- Multi-Processor Enhancement (increases CPU performance rating to 4 MIPS)		1	6,442	504
- 3344-610 System Console with Display & Keyboard		1	1,273	156
- 2614-300 STARLAN Network Access Unit for the 3B2 Processor		1	1,045	180
- 2610-001 STARLAN Network Extender Unit for 11 star ports using the existing TDC wiring		1	845	132
Sub-total			83,595	5,376
b. AT&T Purchased Software				
- 1040-S01 STARLAN Network Program		1	1,045	180
- 1040-S02 STARLAN Server Program		1	684	300

Table 2.17 Time and Cost Estimates for Local Processor/LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- 1041-431 STARLAN Network Utilities		1	225	84
- 1020-S20 50-Copy STARLAN License		1	5,608	n/a
Sub-total			7,562	564
Total			91,157	5,940
2. MIS Detailed Analysis, (SDLC Phase 3) Procurement	3	n/a	n/a	n/a
3. MIS Detailed Analysis, SDLC Phase 3 project execution	6			
- Cost of Detailed Analysis Contract		225	94,000	n/a
4. Phase I Hardware & Software installation at TDC	1			
a. Hardware installation (included in hardware cost)		n/a	n/a	n/a
b. Software installation (included in software cost)		n/a	n/a	n/a
c. Cabling installation (use existing TDC cabling)		n/a	n/a	n/a
d. TDC Technical Support Training				
- Operating System Basic Training Course		2	2,000	n/a
- System Operator Training Course		1	1,000	n/a

Table 2.17 Time and Cost Estimates for Local Processor/LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- System Administration Course		1	1,500	n/a
- Communication Subsystems Training Course		2	2,000	n/a
Total			6,500	n/a
5. Migration of the existing MIS to the new TDC hardware/software	3			
a. Software Procurement				
- AT&T C Compiler		1	1,520	348
- Advanced Development Utilities		1	895	252
- PROCOL License		1	15,000	3,000
Sub-total			17,415	3,600
b. MIS Conversion and Migration				
- Porting of Libraries and Database		10	4,000	n/a
- Integrated System Test		10	4,000	n/a
- Contingencies/Problems		10	4,000	n/a
- Modification of User Documentation		10	4,000	n/a
- MIS User Training		10	4,000	n/a
Subtotal		50	20,000	70,000
Total			37,415	73,600

Table 2.17 Time and Cost Estimates for Local Processor/LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
6. Implementation of DISOSS services for EDTDC & Division Chiefs	2			
a. Hardware				
- IBM PC/AT compatible with 640 KB RAM and 20 MB drive		4	12,000	960
- STARLAN Access Unit for PCs		6	3,852	504
- 73220 Synchronous ISC Controller		1	2,120	216
Sub-total			17,972	1,680
b. Software				
- 1070-021 IBM 3270 Terminal Emulation Software		1	7,141	1,008
- 1020-005 Terminal Emulation Software		6	954	432
Sub-total			8,095	1,440
c. Communication Lines & Modems				
- Cost of 9,600 BPS line and MODEMS btw. TDC & Dorval for the Local Processor alternative		1	600	3,900
d. User Training				
- LAN User Training		6	1,200	n/a
- DISOSS User Training		6	1,800	n/a
Sub-total			3,000	n/a
Total			29,667	7,020

Table 2.17 Time and Cost Estimates for Local Processor/LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
7. MIS Redevelopment & Implementation, SDLC Phase 4 & 5 procurement	3			
a. Development Hardware				
- 4 IBM PCs with Terminal Emulation Software				
NOTE: These PCs are accounted for under the Project Officers' Productivity Tools in (10) below.				
b. Purchased RDBMS & 4GL Software				
- ORACLE RDBMS Version 5.1		1	64,800	10,125
- ORACLE SQL *PLUS		1	12,960	2,025
- ORACLE SQL *FORMS		1	16,200	2,531
- ORACLE Easy *SQL		1	12,960	2,025
- ORACLE TTY PROTOCOL		1	9,720	1,518
- ORACLE PRO *COBOL Language		1	9,720	1,518
Total			126,360	19,742
8. MIS Development, SDLC Phase 4 project execution	9			
a. Cost of Development Contract for Programming and Testing		515	192,000	38,400
b. TDC Development Training				
- System Programmer Training Course		1	1,000	n/a
- Relational Database Basic Training Course		2	2,000	n/a

Table 2.17 Time and Cost Estimates for Local Processor/LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- Relational Database Programmer Training Course		1	1,000	n/a
Sub-total			4,000	n/a
Total			196,000	n/a
9. MIS Implementation, SDLC Phase 5	4			
- Cost of MIS Implementation Project Contract		125	47,500	38,400
10. Implementation of Project Officers' productivity tools	12			
a. Minicomputer Hardware & Software				
- 36020-010 SCSI Intelligent Disk Controller		1	1,956	276
- 36204 300 MB SCSI Disk Drive, 18 msec. access		1	13,903	1,104
- IBM PC/AT compatible with 640 KB RAM and 20 MB drive		17	51,000	4,080
- STARLAN Access Unit for PCs		21	13,482	1,764
- 2610-001 Starlan Network Extender Units for 22 ports		2	1,690	264
- 1020-005 Terminal Emulation Software for PCs		21	3,339	1,512
Sub-total			85,370	9,000
b. PC Productivity Tools Software				
- WordPerfect Word Processing Package for PCs		26	6,500	n/a

Table 2.17 Time and Cost Estimates for Local Processor/LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- Timeline Project Management Package for PCs		5	3,000	n/a
- Lotus 1-2-3 Spreadsheet Package for PCs		5	2,275	n/a
- Relational Database Package (Oracle for PCs no support)		5	1,000	n/a
- Sidekick Plus Personal Productivity package for PCs		27	4,590	n/a
- Smartcom Communications Package for PCs		22	5,280	n/a
Sub-total			22,645	n/a
c. Productivity Tools Training				
- LAN Training Course		26	5,200	n/a
- Word Processor Basic Training Course		26	7,800	n/a
- Project Management Package Training Course		5	1,500	n/a
- Electronic Spreadsheet Package Training Course		5	1,000	n/a
- Relational Database Training Course		5	1,500	n/a
- Personal Services User Training Course		26	5,200	n/a
- Smartcom Communications Package Training		22	4,400	n/a
Sub-total			26,600	9,000
Total			134,615	9,000

Table 2.17 Time and Cost Estimates for Local Processor/LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
11. TDC Library Systems Upgrade	6			
- Exchange of an existing IBM PC/XT with 640 K RAM and 20 MB hard Drive for an AT compatible with 1 Mbytes RAM and fast 40 MB hard drive		1	3,000	240
- Addition of an IBM PC/AT compatible with 640 K RAM and 20 MB hard drive		1	3,000	240
- Upgrade of the existing Library Mailing List and Acquisition Applications to Informix/SQL by internal TDC support resources		60	n/c	n/c
Total			6,000	480
12. Office Automation Hardware & Software procurement	3			
a. Hardware				
- 7324-A2Q 3B3/600 Computer serving as TCN Gateway with 2 MB RAM, 720 KB diskette drive, 72 MB hard disk, 60 MB Cartridge Tape, SCSI AT&T Host Adapter, 10 Serial Ports, Cables & Connectors,		1	24,690	1,860
- 3344-610 System Console with Display & Keyboard		1	1,273	156
- 3331-495 Laser Printer with		2	6,789	2,352
333060 Printer Module		2	1,696	n/c
- IBM PC compatible personal computers with 640 Kbytes memory and 20 MB hard drive		4	8,000	800

Table 2.17 Time and Cost Estimates for Local Processor/LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- STARLAN Access Unit for PCs		7	4,494	588
- STARLAN Extender Unit for PCs		1	845	132
Sub-total			47,782	5,888
b. Software				
- 1020-005 Terminal Emulation software for PCs		7	1,113	504
- 1072-031 AT&T E-Mail (PMXTERM)		1	4,500	n/a
- 1040-030 Document Exchange Base System		1	8,078	2,268
- 1040-035 Document Exchange System Utilities		1	4,016	1,260
- Word Processing Package		7	1,750	n/a
- Personal Services Package		7	1,190	n/a
Sub-total			20,647	4,032
Total			68,434	9,920
13. Office Automation Implementation	9			
a. Basic User Training	3			
- Word Processing Package Basic Training		7	2,100	n/a
- Local Area Network Basic User Training Course		7	1,400	n/a
- Electronic Mail Basic Training Course		7	1,400	n/a

Table 2.17 Time and Cost Estimates for Local Processor/LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
- Personal Services Basic Training Course		7	1,400	n/a
Sub-total			6,300	n/a
b. Advanced User Training	6			
- Word Processing Package Advanced Training		7	1,400	n/a
- Electronic Mail Advanced Training Course		7	1,400	n/a
- Personal Services Advanced Training Course		7	1,400	n/a
Sub-total			4,200	n/a
Total			10,500	n/a
14. Upgrade of TDC Desktop Publishing System	3			
a. Hardware				
- 40 Mbytes additional hard disk drive		1	2,000	300
- 4 Port Multiplexer for Apollo processor		1	2,000	n/a
- IBM PC/AT compatible with 640 KB RAM		1	3,000	240
Sub-total			7,000	540

Table 2.17 Time and Cost Estimates for Local Processor/LAN (Cont'd)

Implementation Activity	Time Mths	Qty	Capital Cost	Maint. Cost
b. Software				
- Apollo Workstation Emulation Program for two existing IBM PC/3270s and one IBM PC/AT compatible		3	3,000	500
Total			10,000	1,040
15. Intelligent Workstations for Financial and Administrative Services Managers	3			
a. Hardware				
- IBM PC/AT compatibles with 640 KBytes and 20 MB hard disk		2	6,000	480
- STARLAN Access Unit for PCs		2	1,284	168
Sub-total			7,284	648
b. Software				
- 1020-005 Terminal Emulation Software for PCs		2	318	144
- WordPerfect (or equivalent) word processing package		7	500	n/a
- Lotus 1-2-3 Electronic Spreadsheet		5	910	n/a
- Sidekick Plus Personal Productivity Software		2	340	n/a
Sub-total			2,068	144

Table 2.17 Time and Cost Estimates for Local Processor/LAN (Cont'd)

Implementation Activity	Time Mths	% of Time	Full Cost	TDC Cost
c. Training				
- Word Processing Package Basic Training		2	600	n/a
- Electronic Spreadsheet Training		2	400	n/a
- Local Area Network User Training Course		2	400	n/a
- Personal Services Basic Training Course		2	400	n/a
Sub-total			1,800	n/a
Total			11,152	792
16. Cost of Support Personnel	12			
- TDC MIS Manager		30 %	n/a	20,000
- TDC Systems Analyst		100 %	n/a	45,000
- TDC Operator/Programmer		100 %	n/a	35,000
Sub-total				100,000

Table 2.18 Summary of Time & Cost Estimates for Local Processor/LAN

Implementation Activity	Time Mths	Capital Cost	Maint. Cost
1. System Hardware & Software	6	91,157	5,940
2. MIS Detailed Analysis, (SDLC Phase 3) procurement	3	n/a	n/a
3. MIS Detailed Analysis, SDLC Phase 3 project execution	6	94,000	n/a
4. Phase I Hardware & Software installation at TDC	1	6,500	n/a
5. Migration of the existing MIS to new TDC hardware/software	3	37,415	73,600
6. Implementation of DISOSS services for EDTDC & Division Chiefs	2	29,667	7,020
7. MIS Development & Implementation, SDLC Phase 4 & 5 procurement	3	126,360	19,742
8. MIS Development, SDLC Phase 4 project execution	9	196,000	n/a
9. MIS Implementation, SDLC Phase 5 project execution	4	47,500	38,400
10. Implementation of Project Officers' productivity tools	12	134,615	9,000
11. TDC Library Systems Upgrade	6	6,000	480
12. Office Automation hardware & software procurement	3	68,434	9,920
13. Office Automation Implementation	9	10,500	n/a
14. Upgrade of TDC Desktop Publishing System	3	10,000	1,040

Table 2.18 Summary of Time & Cost Estimates for Local Processor/LAN Cont'd

Implementation Activity	Time Mths	Capital Cost	Maint. Cost
15. Intelligent Workstations for Financial and Administrative Services Managers	3	11,152	792
16. TDC Support Personnel	12	n/a	100,000
TOTAL (Old MIS)		869,300	227,534
			or
TOTAL (New MIS)			195,934

2.4.2.5 Implementation Schedules

The Gant Chart in Figure 2.5 provides the graphic presentation of the tentative TDC implementation plan based on the TDC need for phased implementation of the proposed systems and upgrades due to:

a. the annual availability of funds for the new hardware, software and development, in addition to the funds required to operate and support the existing systems;

b. the ability of the TDC organization to assimilate the new systems and the associated training requirements while still operating with the existing systems;

c. the inherent lead times associated with the project and budgetary approvals, hardware and software procurement cycles, and MIS detailed analysis, development and implementation cycle.

Since all the alternative solutions are designed to meet the same mandatory user requirements, and are based on the identical or very similar lead times, Figure 2.5 represents the implementation schedules for all solutions considered. The schedule is based on elapsed time in months, relative to the start of the procurement cycle following the TDC and Transport Canada approval.

Figure 2.5 Year 1: <u>TDC Systems Implementation Schedule</u>

```
                          0   1   2   3   4   5   6   7   8   9   10  11  12
Implementation Activity   !   !   !   !   !   !   !   !   !   !   !   !   !
-----------------------------------------------------------------------------
                          !   !   !   !   !   !   !   !   !   !   !   !   !
 1. Initial Hardware and  !___!___!___!___!___!___!   !   !   !   !   !   !
    Software Procurement  !   !   !   !   !   !   !   !   !   !   !   !   !
                          !   !   !   !   !   !   !   !   !   !   !   !   !
 2. MIS Detailed Analysis !___!___!___!   !   !   !   !   !   !   !   !   !
    Procurement           !   !   !   !   !   !   !   !   !   !   !   !   !
                          !   !   !   !   !   !   !   !   !   !   !   !   !
 3. MIS Detailed Analysis     !   !   !___!___!___!___!___!___!   !   !   !
    Project Execution     !   !   !   !   !   !   !   !   !   !   !   !   !
                          !   !   !   !   !   !   !   !   !   !   !   !   !
 4. Phase I Hardware and  !   !   !   !   !   !   !___!   !   !   !   !   !
    Software Installation !   !   !   !   !   !   !   !   !   !   !   !   !
                          !   !   !   !   !   !   !   !   !   !   !   !   !
 5. Migration of Existing     !   !   !   !   !   !   !___!___!___!   !   !
    MIS to New Hardware   !   !   !   !   !   !   !   !   !   !   !   !   !
                          !   !   !   !   !   !   !   !   !   !   !   !   !
 6. Implementation of     !   !   !   !   !   !   !   !___!___!   !   !   !
    DISOSS Services       !   !   !   !   !   !   !   !   !   !   !   !   !
                          !   !   !   !   !   !   !   !   !   !   !   !   !
 7. Procurement of MIS    !   !   !   !   !   !   !   !   !   !___!___!___!
    Development Contract  !   !   !   !   !   !   !   !   !   !   !   !   !
                          !   !   !   !   !   !   !   !   !   !   !   !   !
-----------------------------------------------------------------------------
```

Figure 2.5 Year 2: <u>TDC Systems Implementation Schedule</u>

```
                          12  13  14  15  16  17  18  19  20  21  22  23  24
Implementation Activity   !   !   !   !   !   !   !   !   !   !   !   !   !
-----------------------------------------------------------------------------
                          !   !   !   !   !   !   !   !   !   !   !   !   !
 8. MIS Development       !___!___!___!___!___!___!___!___!___!   !   !   !
    Project Execution     !   !   !   !   !   !   !   !   !   !   !   !   !
                          !   !   !   !   !   !   !   !   !   !   !   !   !
 9. Implementation of     !   !   !   !   !   !       !   !   !___!___!___!
    the New MIS System    !   !   !   !   !   !   !   !   !   !   !   !   !
                          !   !   !   !   !   !   !   !   !   !   !   !   !
10. Implementation of     !___!___!___!___!___!___!___!___!___!___!___!___!
    Project Officers'     !   !   !   !   !   !   !   !   !   !   !   !   !
    Productivity Tools    !   !   !   !   !   !   !   !   !   !   !   !   !
                          !   !   !   !   !   !   !   !   !   !   !   !   !
-----------------------------------------------------------------------------
```

Figure 2.5 Year 3: TDC Systems Implementation Schedule

```
                        24   25   26   27   28   29   30   31   32   33   34   35   36
Implementation Activity !    !    !    !    !    !    !    !    !    !    !    !    !
                        !    !    !    !    !    !    !    !    !    !    !    !    !
11. TDC Library Systems !    !    !    !____!____!____!    !    !    !    !    !    !
    Upgrade             !    !    !    !    !    !    !    !    !    !    !    !    !
                        !    !    !    !    !    !    !    !    !    !    !    !    !
12. Office Automation   !____!____!____!    !    !    !    !    !    !    !    !    !
    Hardware & Software !    !    !    !    !    !    !    !    !    !    !    !    !
    Procurement         !    !    !    !    !    !    !    !    !    !    !    !    !
                        !    !    !    !    !    !    !    !    !    !    !    !    !
13. Office Automation   !    !    !    !____!____!____!____!____!____!____!____!____!
    Implementation      !    !    !    !    !    !    !    !    !    !    !    !    !
                        !    !    !    !    !    !    !    !    !    !    !    !    !
14. Upgrade of Interleaf!    !    !    !    !    !    !____!____!____!    !    !    !
    Publishing System   !    !    !    !    !    !    !    !    !    !    !    !    !
                        !    !    !    !    !    !    !    !    !    !    !    !    !
15. Intelligent Work-   !    !    !    !    !    !    !    !    !    !____!____!____!
    stations for TDC    !    !    !    !    !    !    !    !    !    !    !    !    !
    Managers            !    !    !    !    !    !    !    !    !    !    !    !    !
                        !    !    !    !    !    !    !    !    !    !    !    !    !
```

2.5 BENEFITS

The following paragraphs evaluate the intangible, and some of the financial benefits of each solution presented, in particular, the comparative financial and intangible benefits of the design alternatives considered. The full financial and intangible benefits will be considered and presented in the Cost-Benefit Analysis which will follow the Draft Feasibility Study Report.

2.5.1 Financial Benefits Considered

The following four paragraphs summarize some of the comparative financial benefits of the alternative solutions resulting from their comparative functional and technical merits, particularly as they affect the evaluation of the design alternatives. The full financial benefits will be presented in the Cost-Benefit Analysis Report.

2.5.1.1 Using Transport Canada's Local Processor in Dorval

The main financial advantages of using the Transport Canada Local Processor in Dorval based on the IBM technology are:

a. the possibility of sharing the Regional Informatics management, operations, and technical and application support resources. Our estimates show a comparative financial cost advantage of $ 46,000 per annum (the difference between the estimated Regional and TDC support costs, $ 54,000 and $ 100,000 per annum, respectively);

b. the eventual possibility of combining the Regional Informatics and TDC processing loads on one machine or network when the Transport Canada Informatics and Communications Group decide on the technical upgrade path of the regional facilities, and provided that the technology can satisfy all TDC functional and technical requirements. Sharing of Regional Informatics facilities may then yield additional financial benefits. However, until the technical upgrade path is known, these benefits must be considered as potential and intangible.

2.5.1.2 Installing a Local Processor at TDC

The TDC Local Processor alternative does not offer any tangible financial benefits over other alternatives that are not fully accounted in the cost estimates presented.

2.5.1.3 Microcomputer Based Local Area Network

The TDC Microcomputer Based Local Area Network alternative does not offer any tangible financial benefits over other alternatives that are not fully accounted in the cost estimates presented.

2.5.1.4 Combination of Above (TDC Local Processor and LAN)

The combination of TDC Local Processor and LAN alternative does not offer any tangible financial benefits over other alternatives that are not fully accounted in the cost estimates presented.

2.5.2 Intangible Benefits

The intangible benefits of each design alternative will be fully evaluated and presented in the Cost Benefit Analysis and Report following the submission of the Draft Feasibility Study Report.

Since all the solutions presented meet all TDC functional requirements, only the comparative technical benefits of specific design alternatives are considered here, as they affect the evaluation of alternatives.

2.5.2.1 Using Transport Canada's Local Processor in Dorval

The main intangible benefit of using the Regional Informatics Local Processor in Dorval is the availability of the TCN technical support expertise. However, since neither the Regional nor TCN support resources provide the Unix operating system and application software support, these benefits must be at present considered as potential.

2.5.2.1 Using Transport Canada's Local Processor in Dorval

The main disadvantage of using the Regional Processor is the potential performance limitation inherent in the 19,200 bps line speed serving the TDC Token Ring LAN, and TDC Local terminals and peripherals. This could eventually result in serious performance degradation compared to other alternatives, or require upgrade of the line speed, or additional lines and modems, thus presenting additional costs not included in this study.

2.5.2.2 Installing a Local Processor at TDC

The main advantage of installing a TDC Local Processor lies in the fact that the existing star configuration terminal wiring can be used, thus alleviating any potential disruption to the TDC work environment, apart from saving the cost of installation of LAN wiring accounted for in cost estimates, and preserving the existing investment in the terminal wiring.

The main functional and technical disadvantage of this solution is that it does not provide a Local Area Network capability, i.e. it does not provide for direct exchange of data between intelligent workstations as LAN does. However, this capability is provided by the PC file transfer capability via the minicomputer mass storage provided by the Terminal Emulation software.

2.5.2.3 Microcomputer Based Local Area Network

The main advantage of the combination, microprocessor based local area network and local processor solution lies in the fact that each part of the solution is best suited to its intended purpose, i.e.:

- the minicomputer (or microcomputer) data base machine is best suited to managing the database, while not simultaneously having to manage the LAN communications and peripherals;
- the microcomputer-based local area network, on the other hand, is best suited to managing the LAN traffic and shared LAN peripherals, providing a considerably higher LAN performance than any other solution.

2.5.2.3 Microcomputer Based Local Area Network (Cont'd)

The main disadvantage of this solution lies in a combination of equipment supplied by multiple vendors, and any potential support problems resulting from this arrangement.

2.5.2.4 Combination of Above (Local Processor and LAN)

The main advantages of the minicomputer-based local area network are:

- it satisfies all TDC functional and technical requirements with one vendor solution, thus presenting potential single vendor support advantages;
- it also uses the existing TDC star network wiring, thus avoiding any potential disruption to the TDC work environment, and preserving the existing investment in the site wiring.

The main disadvantage of this solution is the relatively low speed of LAN (1 MBPS) which could introduce a performance problem if the TDC LAN traffic load increases significantly beyond what ca be anticipated at present.

3. EVALUATION OF ALTERNATIVES

3.1 METHODOLOGY

The evaluation of the design alternatives is based on the following methodology:

a. the user requirements, defined in the User Requirements Report, and summarized in paragraph 1.1.2 of this report, are translated into mandatory and optional requirements;

b. the design alternatives are evaluated against the mandatory requirements; those that do not meet the mandatory requirements are rejected;

c. for all design alternatives that meet the mandatory requirements, implementation plans and cost estimates are developed;

d. for each mandatory requirement which can be met to a variable degree, and for all optional requirements, a set of evaluation points is assigned;

e. the viable design alternatives are then evaluated in terms of evaluation points;

f. the evaluation points are divided by the implementation cost to obtain the performance/cost ratio;

g. the design alternative with the greatest performance/cost ratio is considered as the best design alternative, and recommended;

3.1.1 Mandatory Requirements

1. Processor and Operating System

    a. Multi-user, multi-tasking processor environment for support of 48 on-line users, expandable to sixty on-line users;

    b. Response times in relational database environment for TDC estimated average and peak loads defined in paragraph 1.1.2.1.1 and Table 1.1 above;

3.1.1 Mandatory Requirements (Cont'd)

c. On-line access to MIS database application via CRT terminals, and existing intelligent workstations (IBM PC/XT/ATs or compatibles);

d. Provide 600 Mbytes of mass storage space on minimum two disk drives, expandable to 900 Mbytes and minimum of three disk drives;

e. Provide magnetic 9 track tape, 6250 BPI, or cartridge tape of 120 Mbytes capacity per cartridge minimum;

2. Communications

a. Provide support of local CRT terminals via RS422 or multi-point communications interface and protocol at up to 500 feet cable distance from the processor or communications controller;

b. Provide a gateway to the existing Apollo 3000 based Interleaf desktop publishing system via an Ethernet LAN compatible interface;

c. Provide a gateway to TCN via the appropriate IBM SNA communication network protocols for on-line access of TCN existing and future applications in IBM 3270 transparency mode, 3780 Remote Job Entry capability, and SNA LU 6.2 Advanced Peer To Peer communications;

d. Provide the TCN users with access to all TDC operating system services and application systems via the TCN gateway;

e. Provide an asynchronous RS232 remote interface with TDC's Performing Organizations' microcomputers for exchange of R&D Project related information.

3. Applications Development Environment

a. Provide a full relational database management system (RDBMS) based on the proposed ANSII/ISO SQL standard, fully compatible with the Transport Canada Informatics RDBMS standards;

3.1.1 Mandatory Requirements (Cont'd)

b. Provide a full set of 4th G/L development tools, including a menu driven, non-procedural on-line application generator, and menu driven report generator based on the SQL interface;

c. Provide a set of mathematical and statistical functions, combined with graphic output capability or report output data export compatibility with a separate graphics package;

d. Provide full RDBMS integrity features, including automatic back-out of incomplete logical transactions based on the automatic and manual transaction commit control, and roll forward and roll back database recovery based on before and after image logging;

e. Provide full RDBMS application and data security features, including read, write and update access security at the database, table, and column levels;

f. Provide a full audit trail of all RDBMS access events selectable by the system administrator;

g. Provide on-line help function for Data Dictionary provided documentation, and custom help screens created by the application developer;

h. Provide a 3rd G/L language capability with full RDBMS SQL interface.

4. Office Automation Software Packages

a. Provide a set of integrated office automation software packages, including the capabilities for document preparation and production, document distribution compatible with TCN DISOSS document distribution system, personal and group event scheduling, and information filing and retrieval;

b. The office automation packages must provide data exchange (import and export) capability with all other RDBMS and personal productivity packages.

3.1.1 Mandatory Requirements (Cont'd)

5. Personal Productivity Software Packages

   a. Provide an electronic spreadsheet package with graphics capability, and data exchange (import and export) capability with all other office automation, personal productivity and RDBMS software packages;

   b. Provide a project management package for detailed planning and management of TDC's R&D Projects, with data exchange (import and export) capability with the MIS relational database and graphics software packages;

   c. Provide a management graphics package with data exchange (import and export) capability with the MIS relational database output, and all office automation and personal productivity software packages.

3.1.2 Optional Requirements

1. Migration of the Existing MIS Application

   In order to resolve the problem of very poor on-line response times and batch job turn-around times of the existing TDC Management Information System (MIS), the proposed new TDC processor environment should provide an interim capability to support the existing MIS application until it is redeveloped. To meet this requirement, the proposed new TDC processor environment must meet the following requirements:

   a. Provide a proven support of the PROCOL pseudo-relational data base manager and 4th G/L development tools on a 32 bit mini or microcomputer with no additional development or modifications effort;

   b. Provide a proven capability to migrate and support the existing TDC Management Information System (MIS) on the new TDC processor with no, or only minor modifications to the application, and at a minimal, fixed cost and project time;

3.1.2 Optional Requirements (Cont'd)

c. Provide verifiable benchmark migration and performance figures with respect to meeting the TDC objectives with respect to migration time and cost, and TDC performance objectives as outlined in paragraph 1.1.2.1.1 and Table 1.1 above;

d. Provide the support for concurrent development activities in the full SQL relational database environment for a total of 4 development persons.

2. TDC Local Area Network

The proposed new TDC processor should optionally provide a TDC local area network with the capability to:

a. Provide a TDC Local Area Network connecting all the existing TDC intelligent workstations (IBM PC/XT/ATs and compatibles), the Apollo 3000 based Interleaf desktop publishing system which provides Ethernet LAN interface and software, and the proposed new intelligent workstations and office automation peripherals;

b. Provide the intelligent workstation users on the LAN with the capability to:

  - exchange data files among themselves, and the Interleaf desktop publishing system;
  - store data files on, and retrieve data from the MIS processor;
  - on-line access to all MIS processor subsystems and applications;
  - on-line access of all authorized Transport Canada Network (TCN) applications and services in IBM 3270 data stream mode via the TCN gateway.

3. Support of Existing Terminal Equipment

The proposed new TDC processor should optionally support the newer of the existing DEC terminal equipment, including:

3.1.2 Optional Requirements (Cont'd)

a. six (6) DEC VT220 CRT terminals via an RS232/422 asynchronous, microprocessor based multiplexer;

b. two (2) DEC LA210 Letterwriter, and two (2) DEC LA120 DECwriter III serial, character dot-matrix printers via an RS 232/422 asynchronous, microprocessor based multiplexer.

4. Use of the Existing PBX Wiring for TDC LAN

At the time of installation of the existing PBX telephone exchange at TDC, additional capability was built into the exchange for support of a Local Area Network, consisting of two unshielded twisted pairs. To take advantage of this existing facility, the proposed new TDC processor would be optionally required to provide a TDC local area network using the existing double twisted pair wiring.

3.2 EVALUATION CONSTRAINTS

The evaluation method is based on a point rating system where:

- each mandatory evaluation parameter is assigned a fixed number of points;
- each mandatory requirement which can be met to a varying degree is assigned three ranges of parameter values and a corresponding number of points; and
- optional parameters are assigned a fixed number of points each.

The points are based roughly on the corresponding dollar value, and the evaluation procedure consists of:

- rating each design alternative in terms of the total number of evaluation points;
- dividing the total number of points for each design alternative by the five year implementation and operation cost.

The highest performance/cost ratio then yields the recommended alternative.

3.2.1 Mandatory Requirements

Table 3.1 below summarizes all mandatory requirements which must be met by all viable alternatives, and assigns a fixed number of points to each mandatory requirement.

Table 3.1 Point Rating of Mandatory Requirements

Evaluation Parameter	Points
1. MIS Processor and Operating System	100
a. Support a Total of 48 On-line Users	
b. Support of Average 18/ Peak 24 Concurrent Users with Industry Standard Response Times	
c. Provide 2 Disk Drives for 600 Mbytes of Mass Storage, Expandable to 900 Mbytes, 3 Drives	
d. Provide Magnetic Tape Backup, Reel or Cartridge, 120 Mbytes/Reel/Cartridge	
2. Communications	50
a. Provide Concurrent Access to MIS Database	
b. Provide File Transfer Capability for Intelligent Workstations	
c. Provide Sharing of Local Line and Laser Printers	
d. Provide IBM 3270 Data Stream and DISOSS Document Exchange Capability via SNA Gateway to TCN	
e. Provide Ethernet Gateway to Interleaf Publishing System	
3. MIS Application Development Environment	50
a. Provide Multi-user Relational Database Based on the Proposed Full ANSII/ISO SQL Standard	
b. Provide Menu Driven On-line Application and Report Generators	
c. Provide Full Relational Database Integrity and Recovery Features	
d. Provide Statistical Functions and Business Graphics Compatible with Relational Database	

Table 3.1 Point Rating of Mandatory Requirements (Cont'd)

Evaluation Parameter	Points
4. Integrated Office Automation Software	50
a. Provide a TDC LAN Environment Connecting Intelligent Workstations and Shared Peripherals	
b. Provide Word Processing and Document Preparation Software to All Intelligent Workstation Users	
c. Provide Document Control and Electronic Mail Capability Compatible with TCN DISOSS Services	
d. Provide Document Exchange Capability with Interleaf System via Ethernet Gateway	
5. Microcomputer Personal Productivity Software	50
a. Provide Personal Services Software Including the Calendar and Filing Services	
b. Provide Electronic Spreadsheet Package with Data Export/Import Capability	
c. Provide a Project Management Package with Critical Path and Graphic Output Capability	
Total Mandatory Points	350

3.2.2 Optional Requirements

Table 3.2 below summarizes all mandatory and optional requirements which can be met to a varying degree, assigns to each parameter three ranges of parameter values and a corresponding number of points for each parameter value.

Table 3.2 Point Rating of Optional Requirements

	Minimum	Medium		High		
Evaluation Parameter	Value	Points	Value	Points	Value	Points
1. MIS CPU Capacity (MIPS)	4	0	6	20	8	40
2. MIS CPU Performance Upgrade (MIPS)	6	10	8	20	10	30
3. LAN Speed (bits per second)	19.2K	-40	1M	-20	4M	0
					10M	20
4. Disk Space (Mbytes)	600	0	800	10	1000	20
5. Disk Space Expansion (MB)	900	0	1200	10	1500	20
6. Tape Cartridge Capacity (Mbytes)	40	-20	60	-10	120	20
7. Magnetic Tape Data Transfer Rate (Kbytes/sec)	90	-10	120	0	150	10
8. PROCOL 4GL Support	/o	-20	Yes	0	Proven	20
9. Supports Existing Terminal Equipment	No	0			Yes	10
10. LAN Uses Existing Star Wiring	No	0			Y	10
Total Possible Optional Points		40		150		240

3.3 DESIGN ALTERNATIVES VERSUS REQUIREMENTS

3.3.1 Compliance of Alternatives with Requirements

Table 3.3 provides a summary of compliance of the four alternative design configurations with the mandatory requirements.

Table 3.3 Summary of Compliance with Mandatory Requirements

Evaluation Parameter	Regional Processor	TDC Local Processor	TDC Micro Based LAN	Combinatn of Above
1. MIS Processor	100	100	100	100
a. Total of 48 On-line Users	Y	Y	Y	Y
b. Average 18, Peak 24 Users Industry Standard Performance	Y	Y	Y	Y
c. Disk Drives for 600 Mbytes, Expandable to 900 MB, 3 Drives	Y	Y	Y	Y
d. Magnetic Tape Reel or Cartridge, 120 Mbytes/Reel/Cartridge	Y	Y	Y	Y
2. Communications	50	50	50	50
a. Concurrent Access to MIS Database	Y	Y	Y	Y
b. File Transfer Capability for Intelligent Workstations	Y	Y	Y	Y
c. Sharing of Local Line and Laser Printers	Y	Y	Y	Y
d. IBM 3270 Data Stream and DISOSS Document Exchange via TCN Gateway	Y	Y	Y	Y
e. Provide Ethernet Gateway to Interleaf Publishing System	Y	Y	Y	Y
3. MIS Application Environment	50	50	50	50
a. RDBMS Based on ANSII/ISO SQL	Y	Y	Y	Y
b. Menu Driven On-line Application and Report Generators	Y	Y	Y	Y

Table 3.3 Summary of Compliance with Mandatory Requirements (Cont'd)

Evaluation Parameter	Regional Processor	TDC Local Processor	TDC Micro Based LAN	Combinatn of Above
c. Relational Database Integrity and Recovery Features	Y	Y	Y	Y
d. Statistical Functions and Business Graphics Compatible with RDBMS	Y	Y	Y	Y
4. Office Automation Software	50	50	50	50
a. TDC LAN Environment for Intelligent Workstations and Shared Peripherals	Y	Y	Y	Y
b. Word Processing and Document Preparation Software for All Intelligent Workstation Users	Y	Y	Y	Y
c. Document Control and Electronic Mail Compatible with DISOSS	Y	Y	Y	Y
d. Document Exchange Capability with Interleaf via Ethernet	Y	Y	Y	Y
5. Personal Productivity Software	50	50	50	50
a. Personal Services Software Including Calendar and Filing	Y	Y	Y	Y
b. Electronic Spreadsheet Package with Data Export/Import	Y	Y	Y	Y
c. Project Management Package with Critical Path and Graphics	Y	Y	Y	Y
Total Mandatory Points	350	350	350	350

Table 3.4 Summary of Compliance with Optional Requirements

Evaluation Parameter	Regional Processor	TDC Local Processor	TDC Micro Based LAN	Combinatn of Above
1. MIS CPU Capacity (MIPS)	L 0	L 0	L 0	L 0
2. MIS CPU Performance Upgrade	H 30	H 30	H 30	H 30
3. LAN Speed (bits per second)	VL -40	VL -40	H 20	L -20
4. Disk Space (Mbytes)	800 10	600 0	600 0	600 0
5. Disk Space Expansion (MB)	1.5G 20	900 0	1.2G 10	900 0
6. Tape Cartridge Capacity (Mbytes)	40 -20	60 -10	120 20	60 -10
7. Magnetic Tape Data Transfer Rate (Kbytes/sec)	120 0	90 -10	150 10	90 -10
8. PROCOL 4GL Support	Yes 0	Prov 20	Prov 20	Prov 20
9. Supports Existing Terminal Equipment (Y/N)	N 0	Y 10	Y 10	Y 10
10. LAN Uses Existing PBX (Y/N)	/ 0	Y 10	N 0	Y 10
Total Optional Points	0	10	120	30

3.3.2 Summary of Comparative Compliance

The following narrative summarizes the comparative compliance of the four solution alternatives with the TDC requirements:

a. Even though all four solutions meet the mandatory TDC requirements, the high speed LAN solution, coupled with the Unix based micro/minicomputer, best meets the TDC mandatory and optional requirements, since both the LAN and the Unix database machine are dedicated to doing what they do best, and in addition offer the most flexible long term solution.

b. It should be emphasized here, that each of the four alternative solutions presented is typical of what is presently available on the market, although not necessarily the best or the most competitive. It is understood that the best and the most competitive solution will be established by means of competitive bids to a technical specification based on the recommended solution.

c. In order to provide for a reasonable range of competitive solutions and thus enable TDC to select the most appropriate and cost-effective solution, we have not overly emphasized the full compatibility with TCN, namely, the ability to access any part of the TDC Local Area Network or the Unix based database via TCN IBM 3270 terminals, a capability which is presently still problematic for most LAN and micro/minicomputer vendors, but is fully provided by the IBM Token Ring Local Area Network.

3.4 FINANCIAL COMPARISON OF VIABLE ALTERNATIVES

3.4.1 Comparative Costs and Payback Periods

Since we have not performed a full analysis of potential tangible and intangible benefits as of this time, the comparative payback period information will be submitted in the Final Report. However, in order to enable the TDC and Transport Canada management to select the most appropriate solution alternative, and proceed with drafting of the technical specifications, we are providing summaries of comparative costs of the four alternative solutions versus specific TDC user requirements based on TDC priorities.

Table 3.5 provides a cost summary, including the capital and annual operations and maintenance expenditures, for the four alternative solutions, by type of expenditure, i.e. hardware, software, etc., while Table 3.6 provides the summary of implementation costs for each specific TDC requirement in order of TDC priorities.

Table 3.5 Summary of Comparative Costs of Alternative Solutions

Cost Component	Regional Processor	Local Processor	Microcomp. LAN	Minicomp. LAN
1. System Hardware	347 / 21	230 / 19	282 / 27	252 / 22
2. Purchased Software	245 / 17	204 / 31	102 / 13	211 / 32
3. Migration of Existing MIS to New Hardware	24 / 70	20 / 70	20 / 70	20 / 70
4. MIS Redevelopment and Implementation	334 / 38	334 / 38	334 / 38	334 / 38
5. Communications Equipment and Lines	1 / 6	1 / 4	1 / 4	1 / 4
6. User and Technical Training	55 / 0	50 / 0	52 / 0	52 / 0
7. System Operation and Support	0 / 54	0 / 100	0 / 100	0 / 100
TOTALS	1,006 / 136	837 / 192	789 / 182	869 / 196

Table 3.6 Summary of Comparative Costs by TDC Requirement

Cost Component	Regional Processor	Local Processor	Microcomp. LAN	Minicomp. LAN
1. Initial Hardware & Software	241 / 18	60 / 4	102 / 11	91 / 6
2. New MIS Detailed Analysis Procurement	0 / 0	0 / 0	0 / 0	0 / 0
3. MIS Detailed Analysis Project Execution	94 / 0	94 / 0	94 / 0	94 / 0
4. Initial Hardware & Software Installation	11 / 0	7 / 0	15 / 0	7 / 0
5. Migration of Existing MIS to New Hardware	69 / 73	37 / 74	37 / 74	37 / 74
6. Impl. of DISOSS for EDTDC & Div. Chiefs	23 / 1	25 / 7	37 / 7	30 / 7
7. New MIS Development H/W & S/W Procurement	84 / 13	140 / 22	42 / 7	126 / 20
8. MIS Development Project Execution	196 / 38	196 / 0	196 / 0	196 / 0
9. MIS Implementation Project Execution	48 / 38	48 / 38	48 / 38	48 / 38
10. Project Officers' Productivity Tools	143 / 4	125 / 8	132 / 9	130 / 9
11. TDC Library Systems Upgrade	6 / 1	6 / 1	6 / 1	6 / 1
12. Office Automation Hardware & Software	58 / 2	63 / 9	31 / 5	68 / 10
13. Office Automation Implementation	11 / 0	9 / 0	11 / 0	11 / 0
14. Upgrade of Desktop Publishing System	10 / 1	10 / 1	23 / 2	10 / 1

Table 3.6 Summary of Comparative Costs by TDC Requirement (Cont'd)

Cost Component	Regional Processor	Local Processor	Microcomp. LAN	Minicomp. LAN
15. Intelligent Workstations for Admin & Finance Managers	13 / 1	10 / 1	15 / 1	12 / 1
16. TDC Support Staff	0 / 54	0 / 100	0 / 100	0 / 100
Total (Old MIS)	1,006 / 167	838 / 224	789 / 214	864 / 227
or	or	or	or	or
Total (New MIS)	136	193	182	196

3.4.2 Summary of Cost / Performance Evaluation

Table 3.7 summarizes the results of the cost / performance analysis for all alternative solutions evaluated.

Table 3.7 Summary of Comparative Performance vs. Cost Evaluation

Cost Component	Regional Processor	Local Processor	Microcomp. LAN	Minicomp. LAN
1. Total 5 Year Capital & Operation Costs	1,748 K	1,865 K	1,763 K	1,906 K
2. Total Evaluation Points	350	360	470	360
3. Performance / Cost Ratio	.200	.193	.267	.189
4. Normalized Performance / Cost Ratio (100 % ref.)	.75	.72	1.00	.71

3.5 RISK EVALUATION

3.5.1 Risk Considerations

The risks associated with the design alternatives presented here can be categorized into:

a. Risks associated with the existing operating environment and MIS application;

b. Porting and conversion of the existing MIS application onto UNIX operating system and PROCOL 4GL environment;

c. Connectivity issues related to TCN standards, both those affecting the TDC users accessing the TCN applications and facilities, and those affecting the TCN users accessing the TDC applications and facilities;

d. Connectivity and compatibility issues related to solutions involving multiple suppliers of equipment and software;

e. Risks associated with the redevelopment of the existing MIS application.

3.5.1.1 Present Operating Environment and Applications

The risks associated with the present operating environment and MIS application were already dealt with in the User Requirements report. They are summarized here as follows:

a. The DEC RSX-11M-PLUS Operating System, on which the existing MIS application is based, is not the latest version. According to Digital Equipment Company's claim, the relatively frequent data file corruption problems are mainly associated with the known software bugs of the present version and release of software.

On the other hand, the PROCOL 4GL version supported on RSX 11M is presently of limited commercial value to SSM since it is only used by TDC, and therefore also poorly supported.

The combination of the above factors could be severely aggravated by any personnel turn-over within SSM organization, the supplier of PROCOL 4GL software, and the sole development and support contractor at TDC.

b. Based on the DSS investigation of the longer term viability of the SSM organization itself, and our own observations as well as those of TDC management, it appears that SSM had limited success in marketing the PROCOL 4GL product and its services outside of TDC, thus remaining highly financially dependent on the volume and profitability of its on-going TDC contracts.

This, in turn, has severely constrained the ability of TDC management and Montreal DSS office to reduce the cost of the TDC facilities management and application support contracts, since any risk to SSM is directly translated into risks to the viability of the existing TDC MIS applications.

c. Failure on the part of TDC and Transport Canada to limit the above risks to TDC information systems by replacing the obsolete hardware and software environment, and redeveloping the MIS application on the basis of sound and industry standard development environment, and sound Departmental standards will almost certainly increase the present risks in the future, quite apart from limiting the effectiveness of the majority of MIS users in performance of their job functions.

3.5.1.2 Porting and Conversion of Present MIS Application

The proposed porting and conversion of the existing MIS application to UNIX environment has been considered as the only interim measure that can substantially increase the performance of the existing MIS application at a reasonable cost, while the existing application is redeveloped as suggested above.

In order to reduce the risks associated with the proposed conversion, and before including the conversion with the stated TDC user requirements, we have suggested a porting and conversion benchmark to be carried out by the SSM contractor on the basis of some minimum benchmark standards and documentation of the benchmark conditions and results.

Even though the minimal standards and documentation were outlined in a TDC memorandum to the SSM contractor, the contractor had totally ignored them at the time of the benchmark presentation, and instead presented the intended benchmark as an unsolicited sales presentation with the participation of and equipment vendor.

3.5.1.2 Porting and Conversion of Present MIS Application *(Cont'd)*

Nevertheless, our own witnessing of the 'benchmark' presentation established a number of risks related to the proposed porting and conversion, including:

- false claims and representations of the SSM contractor with respect to the performance of the vendor's equipment;
- false interpretation of TDC's performance requirements, as well as the benchmark performance results based on a highly optimistic TDC operational scenario;
- false claims of the vendor with respect to the status as of that time of the PROCOL 4GL Unix based product;
- repeated crashing of the on-line MIS PROCOL programs.

In spite of the shortcomings related to the conduct and presentation of the benchmark, our own judgement of the benchmark results were that:

- the proposed porting of the application is feasible within a reasonable cost and time;
- it can significantly improve the performance of the MIS application, although it can not completely resolve the MIS performance problems in long term;
- it can significantly reduce the risks associated with the existing hardware and software environment;
- TDC and Transport Canada DCI should carefully evaluate any further SSM contractor's claims with respect to the longer term potential of this interim solution, closely monitor the conversion project time and cost, and limit the further contractor's influence on TDC long term information systems decisions.

3.5.1.3 TCN Connectivity Issues

The TCN connectivity issues that are primarily applicable to the proposed TDC solution include:

a. Access of the TCN DISOSS services by EDTDC and Division Chiefs;

3.5.1.3 TCN *Connectivity Issues (Cont'd)*

b. Access of the MIS database via a 3270 terminal and TCN by DGRD;

c. Access of the Financial and Materials Management systems by the TDC Managers of Financial and Administrative Services;

d. Potential sharing of other TCN applications and specialized devices by Division Chiefs and Project Officers.

The risks associated with the above requirements can be summarized as follows:

(1) Full function support of SNA 3270 device protocol via the proposed TCN gateway, in the sense that practically all vendors of the relevant equipment and software presently claim full function support, but Transport Canada DCI tests indicate that careful testing is required to establish full function support and reliability of relevant hardware/software.

(2) Full function support of the reverse SNA 3270 device protocol to access the Unix based MIS database from the TCN 3270 terminals, a function presently supported only by the IBM Token Ring LAN, according to the Transport Canada DCI tests, but claimed by many other vendors;

(3) The ability to share expensive and specialized TCN input/ output devices from the TDC Local Area Network, a function presently supported by the IBM Token Ring LAN, and still problematic as far as other vendors are concerned.

Of the three main connectivity function outlined above, only (1) is of immediate and high priority, related to access of TCN DISOSS services. Functions (2) and (3) can presently be met by the IBM token Ring LAN capability which is not included as a brand name solution, but is identical in architecture to the microprocessor based LAN solution, and price competitive from our preliminary investigation.

In order to reduce the risks associated with these highly dynamic issues, the technical generic specifications can specify proven compliance with requirements (1) through (3) above, and selection can be based on TCN tests and/or other vendor presentations and proofs.

3.5.1.4 Connectivity Issues Related To Multi-Vendor Solutions

The alternative designs presented here involve both single vendor (alternatives 1, 2 and 4) and multi-vendor solutions (alternative 3, microprocessor-based LAN solution based on MS DOS). It has been a general industry experience that single vendor solutions are generally easier to support, and are therefore preferable to multi-vendor solutions.

To reduce the risks associated with the potential multi-vendor offerings resulting from the competitive bidding, the generic technical specification can require proven, one vendor support of the entire hardware software solution, as well as full function, proven support of all connectivity related functions.

3.5.1.5 MIS Redevelopment Risks

In our judgement, the overall risks entailed in the present TDC MIS operating environment far outweigh the risks implied by the proposed redevelopment of the MIS application.

Nevertheless, every major software development effort presents some risks, including:

(1) The risk of potential over-runs in terms of project time and costs, which can be minimized by:

- selection of sound development environment and technology, and a reputable and viable contractor with proven track record with specific technologies;
- compliance with sound development methodologies, such as for example the Transport Canada Systems Development Life Cycle standards (SDLC);
- strong and experienced project management involving project management responsibility on the part of the development contractor and the end-user environment, in order to ensure the optimum cooperation of the combined development team.

3.5.1.5 MIS Redevelopment Risks (Cont'd)

(2) The risk of poor performance of the newly developed and implemented application due to less than sound functional and organic analysis, which can be minimized by:

- sound functional and organic analysis procedures, standards and techniques, and
- specific contractual responsibilities on the part of the contractor with respect to the system performance.

(3) The risks related to the reliability of the new system, on-going support, and the general user acceptance of the application upon implementation, which can be minimized by:

- sound analysis and development project planning and execution, including thorough analysis and design reviews at important project milestones;
- user acceptance and sign-off of the functional system design, and user acceptance test with live user data and sign-off upon completion of the unit, module, and system tests in the development process;
- participation of the in-house information systems staff in the analysis and development process with the view of establishing an in-house, long-term application and user support capability.

3.5.2 Summary of Risks

In summary, the risks inherent in the present TDC MIS and related applications and facilities by far outweigh the potential risks involved in the proposed systems and facilities, provided that:

- Transport Canada TCN standards and product connectivity testing information is applied to all elements of the proposed solution;
- A single vendor hardware/software support solution is secured for all critical system components via the competitive bidding process;

3.5.2 Summary of Risks

- Transport Canada's SDLC standards are applied to all phases of the MIS redevelopment project;
- Sound and long-term viable contractors is selected for supply, development and support of the hardware and software;
- Thorough project management and review standards are applied to the development and implementation process, as well as strict contractor accountability for all services and deliverables.

3.6 HUMAN RESOURCE CONSIDERATIONS

3.6.1 Staffing Requirements

All four alternative solutions considered imply no change in end-user staffing requirements other than the TDC longer term personnel down-scaling program. The staffing requirements presented here deal mainly with the long term TDC technical, applications and end-user support requirements relative to the systems proposed.

In terms of information systems and facilities support staffing, the four alternative solutions considered involve the following three long term support staffing scenarios:

1. Transport Canada (TCN) / Regional Informatics Support

   In case that the Regional Processor Solution provides the IBM Netview system operation and support capability, the TDC operational environment could be operated and technically supported by the TCN (Ottawa) operators and technical support specialists, while the MIS and Office Automation application and end-user support could be provided by the Dorval Regional Informatics Group on the basis of shared support resources.

   Since at the time of the definition of alternative design solutions the Regional Informatics upgrade policy was not sufficiently defined to enable us to elaborate such a combined processor solution, we have not elaborated the exact staffing requirements and costs.

2. Assuming a Regional Processor solution involving a separate processor for TDC requirements, as presented by the Regional Processor (Dorval) solution in alternative designs above, the TCN operations and technical support becomes less plausible. In that case, we have based our support staffing requirements on the Regional Informatics (Dorval) staff as follows:

   - The role of the TDC MIS Manager could be assumed by the Regional Informatics Manager on the basis of approximately 20 % of his time;

3.6.1 Staffing Requirements (Cont'd)

- The role of the TDC System Operator could be assumed by the existing Regional Informatics (Dorval) operator on the basis of approximately 50 % of time.

- The role of the Information Systems Analyst responsible for the TDC applications and end user support could be assumed by a Regional Informatics Analyst on the basis of approximately 50 % of the time.

Since the Regional Informatics staff are presently not trained in the operating system and 4GL technology proposed for the TDC systems, the costs of training were included in the appropriate cost summaries.

3. Local TDC Support Staffing

Assuming a local TDC solution, involving a Local Processor, or a combination of a Local Processor and Local Area Network, TDC would require local support resources as follows:

- The role of the TDC MIS Manager could be assumed by a Senior Project Officer on the basis of 30 % of his time;

- A dedicated TDC Systems Operator/Programmer would be required on a 100 % time basis, backed-up by the Systems Analyst when not available;

- The TDC technical, application and end user-support would be provided by a dedicated TDC Information Systems Analyst on a 100 % time basis, who would also assume the back-up role for the Operator.

As above, the cost of training for the MIS manager, Analyst and Operator have been included in cost estimates for all alternative solutions.

3.6.2 Training Requirements

The TDC training requirements related to all proposed systems have also been included in cost estimates for all alternative designs considered. The following outlines the rationale and the basis of cost estimates:

3.6.2.1 TDC MIS Support Training

The following training has been included in the cost estimates to meet TDC requirements for the facilities management, application and end-user support:

Training Course	Applicable To	Duration
Basic Operating System Training	Analyst	5 days
	Operator/ Programmer	5 days
System Operator Training Course	Operator/ Programmer	5 days
System Administration Course	Analyst	5 days
Communication Systems Training	Analyst	5 days
	Operator/ Programmer	5 days
Basic Relational Database Training	Analyst	5 days
	Operator/ Programmer	5 days
Relational Data Base Programming	Analyst	5 days
Total		45 days

3.6.2.2 MIS User Training

The following training for the MIS users has been included in the cost and implementation estimates:

1. MIS Migration To New Hardware

   To retrain the MIS users after the proposed migration to the new hardware and operational environment, we have included 10 days of contractor's time for retraining of the MIS users.

2. New MIS Training

   To train the MIS users in the process of implementing the proposed new MIS, 20 days of contractor's time has been included in the new MIS implementation estimates.

3.6.2.3 Professional Productivity Tools Training

The following user training on professional productivity tools has been included in the cost and implementation estimates:

Training Course	Applicable To	Duration
Local Area Network	All users	2 days
Word Processing	All users	3 days
Personal Services	All users	2 days
PC Communications	All users	2 days
Electronic Spreadsheet	Finance & Admin Mgrs	2 days
Project Management Package	Five key users	3 days
Relational Database Package	Five key users	3 days
DISOSS Services	EDTDC & Div. Chiefs	3 days

3.6.2.4 Office Automation Training

The following Office Automation training has been included in the cost and implementation estimates:

Training Course	Applicable To	Duration
	All Secretaries	2 days
Word Processing Basic Training	All Secretaries	3 days
Electronic Mail Basic Training	All Secretaries	2 days
Personal Services Basic Training	All Secretaries	2 days
Word Processing Advanced Training	All Secretaries	2 days
Electronic Mail Advanced Training	All Secretaries	2 days
Personal Services Advanced Training	All Secretaries	2 days

3.6.3 Organizational Impact

The following briefly summarizes the anticipated organizational impact of implementing the proposed new TDC hardware/software environment and systems:

1. Hardware/Software Environment

   Implementation of the new TDC hardware/software environment based on an MIS database machine and a local area network will:

   - resolve the connectivity and performance related limitations of the presently obsolete DEC PDP 11 MIS environment;
   - provide the EDTDC and Division Chiefs with an access path to TCN DISOSS services via the TCN gateway, as well as access to any other TCN applications to other potential users;
   - interconnect all of TDC related systems and workstations on a local area network;
   - provide a solid basis for redevelopment and continued evolution of the MIS and related systems.

2. The interim migration of the existing MIS to the new hardware environment will:

   - provide the TDC Financial Services with on-line transaction response times closer to industry standards, and thus enable them to improve their productivity to meet the anticipated increase in transaction volumes, as well as to meet the longer term personnel down-scaling program;
   - improve the performance of the Project Officers' inquiries and report turn-around time, and improve their access to the MIS application by integrating the existing and proposed intelligent workstations with the MIS system;
   - improve the reliability and availability of the MIS system, improve the technical support while reducing the hardware/software support costs, and reduce the DEC and SSM support risks inherent in the obsolete equipment and software.

3.6.3 Organizational Impact (Cont'd)

3. Implementation of the Project Officers' intelligent workstations and productivity software, and their integration via a local area network will:

   - improve the access to, and usefulness of the MIS database information via the on line queries and file transfer capability to their own intelligent workstations, and treatment with the spreadsheet software, relational database, graphics, word processing, etc.

   - provide a comprehensive set of personal productivity tools and the necessary training to employ them effectively in solving a set of common problems as a community of inter-related and cooperating users, improve their productivity, and enable them to meet the challenges of increasing work-load without significant increases in staffing;

   - improve the exchange of information with the performing organizations via the PC communications interfaces, timeliness of project status reporting, and MIS project information update;

   - reduce the redundancy of the specialized equipment, and improve the access to the existing and future peripherals via the local area network.

4. Implementation of the Office Automation hardware, software and training for the secretarial staff will:

   - provide every secretary with her own workstation, and integrate the workstations with the entire TDC information systems environment, including access to the MIS;

   - provide the standardized word processing software for preparation of various documents and correspondence, and a local area network for exchange of information;

   - provide a local electronic mail system, integrated with the TCN DISOSS services via the TCN gateway, and personal services software, to better respond to the needs of the Division Chiefs and Project officers, and improve the office efficiency and effectiveness of the organization as a whole.

3.6.3 Organizational Impact (Cont'd)

5. Upgrade of the TDC Research Library systems will:

   - improve the availability of the equipment, and improve the performance of the existing software;
   - conversion of the existing applications to SQL version of the relational database will further improve the performance of the existing systems, as well as improve the long term support.

6. Upgrade of the TDC Desktop Publishing System and its integration with the TDC LAN via the LAN gateway will:

   - provide two additional on-line intelligent workstations for the Technical Editor and data entry person;
   - provide the required graphics and text file storage via the LAN file transfer capability to and from the LAN Disk Server and LAN intelligent workstations.

7. The redevelopment of the existing MIS on the basis of the state-of-the-art hardware and software, sound development methodology and standards, and the present knowledge of the MIS users of their needs, will:

   - provide all TDC users, and particularly the Project Officers, with the system functionality corresponding to their present and future needs;
   - provide an integrated MIS database based on industry standard SQL relational technology, and greatly improve the accessibility and portability of the MIS information, particularly to the Chiefs and Project Officers;
   - eliminate the existing performance, availability, accessibility, documentation and support related problems of the existing MIS technology and application software;
   - reduce the costs of maintenance and support, as well as eliminate the present risks associated with the single source support;

3.6.3 Organizational Impact (Cont'd)

- provide a sound technical basis for further evolution of the functionality and integration with the intelligent workstations and personal productivity tools, as well as with the Office Automation environment.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

The following summarizes our conclusions of the User Requirements and Feasibility Studies:

(1) The present TDC information systems are based on obsolete hardware and software technology which is costly to maintain, does not provide the required level of performance, can not be upgraded or expanded to meet the TDC operational objectives, and presents unacceptable risks to vital TDC information systems in medium and long term.

(2) The MIS applications developed over the last 10 years meet the basic requirements of the TDC Financial and Administrative Services user areas, however, they fall far short of the requirements of the Project Officers who constitute potentially the largest TDC user group. As well, the present MIS software can not serve as a sound basis of further functional evolution due to the shortcomings of the PROCOL 4GL environment and poor application design arising from lack of adequate development standards and procedures.

(3) Our examination of the SSM contractor's performance has established a lack of adequate procedures and standards in most areas of his responsibilities, including the operations and maintenance procedures, user and systems documentation, and contract reporting procedures which can in no way justify the rising support costs and the staffing levels over the last three years. In addition, the present status of the MIS software and documentation, the SSM exclusive rights to the PROCOL 4GL tools and ability to provide the software support, and the degree of SSM dependence on the TDC contracts also present unacceptable longer term risks to the TDC information systems.

(4) Most of the problems and weaknesses inherent in the present TDC information systems and facilities that have accumulated over the years can be attributed to the failure to adequately enforce Transport Canada's Informatics standards and procedures. Their resolution will require the implementation of a well considered and coherent program of improvements based on the overall TDC priorities arising out of its operational objectives and constraints. Our recommendations on the following pages provide a summary of a TDC information systems plan.

4.2 RECOMMENDATIONS

To meet its operational objectives under the constraints of the increased R&D budget levels and activities without a proportional increase in staffing, and to alleviate the short and longer term problems and risks inherent in its existing information systems and facilities, TDC will have to invest in the upgrade and renewal of its information systems and facilities on the basis of the following recommedations:

Short Term (1 Year)

(1) Replace the obsolete and undersized PDP 11/44 hardware with state-of-the-art hardware and software technology compatible with Transport Canada Network (TCN) standards.

(2) Convert and migrate the existing MIS application to the new hardware in order to achive the minimal level of required performance and improve the user access to the MIS information.

(3) Implement the TCN DISOSS services for the Executive Director and Division Chiefs via local intelligent workstations, the TDC local Area Network, and the TCN Gateway.

(4) Provide the Project Officers with intelligent workstations integrated with the new MIS environment via the TDC Local Area Network, and a set of personal productivity software tools and the required training to use them effectively.

Medium Term (2 years)

(5) Redevelop the existing MIS application on the basis of full functional requirements of all TDC user areas, industry standard 4GL technology compatible with Transport Canada standards, and sound development methodology and documentation standards.

(6) Upgrade the TDC Library application systems hardware, and convert the application software to SQL version of the 4GL environment.

(7) Upgrade the Interleaf Destop Publishing System by adding two additional workstations for text data entry and editing, and integrate it with the TDC LAN via a gateway.

Long Term (3 Years)

(8) Implement an Office Automation System for TDC secretarial staff based on intelligent workstations and TDC Local area network, and provide a Gateway to the TCN DISOSS services.

(9) Provide intelligent workstations and a set of personal productivity tools to TDC Financial and Administrative Services Managers.

5. FEASIBILITY STUDY PHASE CHECKPOINTS

5.1 CHECKLIST OF CRITICAL ITEMS

		YES	NO
1.	Alternatives identified, categorized and described	Y	
2.	Alternatives costed to "B" class level	Y	
3.	Schedule/Plan submitted for each alternative	Y	
4.	Evaluation methodology identified	Y	
5.	Costs vs. benefits analyzed for each alternative		N
6.	Risk assessment completed for each alternative	Y	
7.	Human resource considerations assessed for each alternative	Y	
8.	Alternatives summarized	Y	
9.	Recommended alternative presented	Y	
10.	Application profile updated		N
11.	Computer facilities (hardware/software) presented and costed	Y	
12.	Refinement process, if applicable, identified and described		N
13.	Refinement process, if applicable, detailed to "A" class level		N
14.	Schedule/Plan for refinement process completed, if applicable.		N

5.2 SIGN-OFFS

1. Client/Owner ______________________________

____

2. Project Manager ______________________________

____

3. ADMF -MSP/X ______________________________

____

4. ADMF - DCI/X ______________________________

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TP 9699E

TRANSPORTATION DEVELOPMENT CENTRE

COMPUTER SYSTEMS REQUIREMENTS AND RECOMMENDATIONS

VOLUME 3 OF 4

APPENDIX A: MIS SYSTEM OUTPUTS

DIGI-PLUS Inc.

January 12, 1989

Library and Information Centre /
Centre de Documentation (GSLA)
RECEIVED - REÇU LE
JUN 9 1989
Transport Canada Transports Canada

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APPENDIX A - SECTION 1

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                       *** MENU pour OP/PLN           ***
                       ----------------------------------

  1- MODAL SUMMARY FOR ONE MODE           2- MODAL SUMMARY FOR ALL MODES
  3- OVERALL SUMMARY                      4- DETAILLED REPORT

Choisissez une fonction->
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                                     OPERATIONAL PLAN MODAL SUMMARY FY 1986/87                          PAGE    1
RAIL FREIGHT                         ========================================
                                                                                              AS OF 87/05/20
                                                              COST CURRENT YEAR
                                     .------------------------------------------------------------------------.
MEC #                                      PLAN      ESTIMATED      INCURRED        ACTUAL    UNCOMMITED
.....                                      ....      .........      ........        ......    ..........

R100: ELECTRIFICATION                   178,000        237,801       185,801       179,217       -59,801
R200: MOTIVE POWER TECHNOLOGY           245,000        333,321       295,897       279,364       -88,321
R300: FREIGHT CAR SYSTEMS               250,000        172,740       168,740       168,740        77,259
R400: TRAIN SYSTEMS                     151,000         70,303        56,501        56,501        80,696
R500: TRACK AND INFRASTRUCTURE          260,000        205,526       196,124       196,124        54,473
R600: SIGNALS,CONTROLS AND COMMUNIC.    375,000        377,998       377,998       377,998        -2,998
R700: RAIL SYSTEM RESEARCH & TECH.      357,000        272,093       246,361       181,796        84,906
R800: TERMINALS AND YARDS               100,000              0             0             0       100,000
R900: TECHNOLOGY TRANSFER                83,000         79,383        79,376        79,376         3,616
                                     --------------------------------------------------------------------------
                            TOTAL :   1,999,000      1,749,169     1,606,802     1,519,120       249,830
                                     --------------------------------------------------------------------------
```

1.1

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OPERATIONAL PLAN OVERALL SUMMARY FY 1986/87                                      AS OF 87/05/21
============================================

                              COMPARISION OF PLANNED AND ACTUAL COSTS
                    .-----------------------------------------------------------------------------------.
MODES                    OPER.PLAN    ESTIMATED     INCUR$CY       ACTUAL    COMMITTED    UNCOMMITED
.......................  .........    .........     ........       ......    .........    ..........
RAIL FREIGHT             1,999,000    1,749,169    1,606,802    1,519,120          87%       249,830
RAIL PASSENGER             575,000      510,077      493,704      457,124          89%        64,922
MARINE TRANSPORTATION    3,900,000    3,773,785    3,704,622    3,640,419          97%       126,214
AIR TRANSPORTATION       2,256,000    1,875,346    1,741,760    1,689,177          83%       380,653
HIGHWAY TRANSPORTATION   1,586,000    1,387,527    1,314,333    1,302,012          87%       198,472
URBAN TRANSPORTATION       865,000      445,509      431,686      421,414          51%       419,490
OFF-ROAD SOLIDS PIPELINES   55,000       64,482       64,482       64,482         117%        -9,482
MULTIMODAL                 167,000            0        2,244            0           0%       167,000
TLV TECHNOLOGY             350,000      400,350      373,214      373,172         114%       -50,350
ELDERLY & HANDICAPPED R&D 1,175,000   1,032,492      972,896      875,675          88%       142,507
PROGRAM SUPPORT            790,000      790,310      646,242      644,882          90%        79,689
-----------------------------------------------------------------------------------------------------

TOTAL :                 13,798,000   11,939,053   11,351,988   10,987,482          87%     1,768,946

PROJECTS NOT CODED                            0            0            0
```

1.2

```
MEC     RSP# #   OFF PRJT  PRJT #    PRJT TTL                            TOT$AUTH    TOT$INCR      ACT$CY     INCR$CY      EST$CY    EST$CY+1
============================================================================================================================================

R100    ELECTRIFICATION

        TO DEVELOP EXPERIENCE WITH ELECTRIFIED RAILWAY SYSTEMS IN CANADA IN
        PREPARATION FOR POSSIBLE FUTURE ELECTRIFICATION OF CERTAIN SECTORS
        OF THE CANADIAN RAIL SYSTEM

         106612  VERSAILLES  4960   BCR ELECT-SYSTEM DOCUMENTATION      373,373     371,409           0           0           0           0
         106612  VERSAILLES  4961   BCR ELECT-SYSTEM DOCUMENTATION      136,626     136,626           0           0           0           0
         106613  VESPA       5887   RAILWAY SAFETY STANDARDS STUDY       33,000           0           0           0      32,000       1,000
         106612  VERSAILLES  6647   ETUDE CHEMINS DE FER COTE-NORD      200,000     180,000     140,977     147,561     167,561           0
                                                                     ==========  ==========  ==========  ==========  ==========  ==========
                                                             TOTAL      743,000     688,035     140,977     167,561     199,561       1,000

R111    SITE SPECIFIC SYSTEM STUDIES

        TO IDENTIFY THE SYSTEM REQUIREMENTS AND THE RELATED CAPITAL AND
        OPERATIONS AND MAINTENANCE COSTS OF ELECTRIFICATION.

         106611  DIPPLE      6825   DANGEROUS GOODS ACCIDENT MODEL       11,626           0           0           0           0      11,626
         106611  DIPPLE      6836   DANGEROUS GOODS ACCIDENT MODEL       79,100           0           0           0           0      79,100
                                                                     ==========  ==========  ==========  ==========  ==========  ==========
                                                             TOTAL       90,726           0           0           0           0      90,726

R112    ELECTRIFICATION GUIDELINES

        TO DEVELOP GUIDELINES FOR ELECTRIFICATION IN THE CANADIAN CONTEXT,
        INCLUDING GUIDELINES FOR ELECTROMAGNETIC INTERFERENCE(EMI) RELATED TO
        SIGN.AND COMMUNICATIONS AND GUIDELINES FOR CATENARY DESIGN RELATED TO
        ENVIRONMENTAL CONDITIONS AT THE SITE REGARDING WIND ICE OR SNOW ACC.

         106612  VERSAILLES  6313   CATENARY DEFLECTION                 148,804     148,804           0           0           0           0
         106612  VERSAILLES  6754   CATENARY DEFLECTION                  38,243      38,240      38,240      38,240      38,240           0
                                                                     ==========  ==========  ==========  ==========  ==========  ==========
                                                             TOTAL      187,048     187,044      38,240      38,240      38,240           0
```

1.3

T D C
OPERATIONAL PLAN
REVIEW
1986/87

DATE : 87/05/21

1.4

OPERATIONAL PLAN MODAL SUMMARY FY 1980/81

RAIL FREIGHT

AS OF 07/05/80

MEC #	COST CURRENT YEAR				
	PLAN	ESTIMATED	INCURRED	ACTUAL	UNCOMMITED
R100: ELECTRIFICATION	178,000	237,801	185,801	179,217	-59,801
R111	0	0	0	0	0
R112 ELECTRIFICATION GUIDELINES	0	38,240	38,240	38,240	-38,240
R200: MOTIVE POWER TECHNOLOGY	245,000	333,321	295,897	279,364	-88,321
R221 FUEL EFFICIENT MOTIVE POWER	0	139,451	114,451	114,451	-139,451
R222 TRACTION SYSTEM RESEARCH	0	22,160	22,160	5,627	-22,160
R223 LOCOMOTIVE DESIGN AND TECH.	0	171,708	159,285	159,285	-171,708
R224 WINTER OPERATIONS	0	0	0	0	0
R225 MICROPROCESSORS IN LOCOMOTIVES	0	0	0	0	0
R300: FREIGHT CAR SYSTEMS	250,000	172,740	168,740	168,740	77,259
R331 TRUCK TECHNOLOGY	0	33,860	31,860	31,860	-33,860
R332 TANK CAR SAFETY	0	108,517	108,370	108,370	-108,517
R333 CAR RESISTANCE	0	30,362	28,509	28,509	-30,362
R334 CAR MAINTENANCE	0	0	0	0	0
R400: TRAIN SYSTEMS	151,000	70,303	56,501	56,501	80,696
R441 DATA,CONDITION MONITORING	0	13,728	3,728	3,728	-13,728
R442 TRAIN HANDLING SYSTEMS	0	24,286	20,484	20,484	-24,286
R443 HIGH PROD. INTERGRAL TRAIN	0	1,665	1,665	1,665	-1,665
R444 TRAIN SIMULATION	0	30,622	30,622	30,622	-30,622
R445 ERGONOMIC STUDIES	0	0	0	0	0
R446 TRAIN SAFETY	0	0	0	0	0

APPENDIX A - SECTION 2

```
                    *** MENU pour MAJ/PPF         ***
                    -----------------------------------

  1- INSERT A NEW PROPOSAL                 2- DELETE PROPOSAL PROJECT
  3- TO MODIFY A PROPOSAL                  4- EDTDC COMMENTS
  5- PROPOSED PROJ. BY RSPB CENTER         6- PROPOSED PROJECTS BY MODE

Choisissez une fonction->
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TRANSPORTATION DEVELOPMENT CENTRE / CENTRE DE DEVELOPPEMENT DES TRANSPORTS

PROPOSED PROJECTS

MODE : ELDERLY & HANDICAPPED R&D

OFFICER	DESCRIPTION / STATUS	PROBABLE CONTRACTORS	EST$ COST	P.J.	TDC COMMENTS
MARSHALL	LIFT INSTALLATION FOR THE PREVOST ARTIC. FOR DEMONSTRATION BY VIA (TRAIN SUBSTITUTION) OR VOYAGEUR (MONTREAL-QUEBEC DEMO). SUBMITTED FOR INCLUSION IN TDPP FY88/89 PLAN. REF. # -> 255	PREVOST CAR	350,000	01/88	
MARSHALL	STATION-BASED ACCESS DEVICE FOR INTERCITY BUS - DEVELOPMENT AND DEMONSTRATION. APPROVED FOR TDPP FUNDING. FIRST STEP: 2 CONCEPTS TO BE TESTED IN MOCK-UP FORM, ONE WORKING PROTOTYPE TO BE BUILT. REF. # -> 178	U. OF OTTAWA	75,000	06/87 08/87	PRIORITY #1. TDC'S STRONGLY COMMITTED TO UNDERTAKE THIS PROJECT AS PART OF ITS 1987/88 WORK PROGRAM.
MARSHALL	LONG TERM ACCESSIBLE BUS DEMO ON A MAJOR INTER-CITY ROUTE. TASKED BY TDPIC. MIRAGE XL AVAILABLE JAN 88 FOR 12 MONTHS. CBA IS SOLICITING CARRIERS FOR INTEREST. REF. # -> 179	MAJOR CARRIER	75,000	09/87	PRIORITY #2. THE PJ SHOULD EXPLAIN REASONS WHY MCI ACCESSIBLE BUS NOT ACCEPTABLE FOR THIS DEMO & WHY PREVIOUS DEMO'S OF EL-LIFT TECHNOLOGY HAVE NOT FURNISHED NECESSARY DATA. TDPP FUNDING ESSENTIAL.
MARSHALL	EL-LIFT STRUCTURAL VERIFICATION. TO BE INTEGRATED WITH OVERHALL/MODIFICATION WORK AT THE END OF THE 3-YR ROADCRUISER DEMO. SUBMITTED FOR INCLUSION IN TDPP FY 88/89 PLAN. REF. # -> 256	TES LIMITED	50,000	11/87	

2.1

PROPOSED PROJECTS

MODE : ELDERLY & HANDICAPPED R&D

OFFICER	DESCRIPTION / STATUS	PROBABLE CONTRACTORS	EST'S COST	P.S.	TDC COMMENTS
MARSHALL	LIFT INSTALLATION FOR THE PREVOST ARTIC. FOR DEMONSTRATION BY VIA (TRAIN SUBSTITUTION) OR VOYAGEUR (MONTREAL-QUEBEC DEMO). SUBMITTED FOR INCLUSION IN TDPP FY88/89 PLAN. REF. # -> 255	PREVOST CAR	350,000	01/88	
MARSHALL	EL-LIFT STRUCTURAL VERIFICATION. TO BE INTEGRATED WITH OVERHALL/MODIFICATION WORK AT THE END OF THE 3-YR ROADCRUISER DEMO. SUBMITTED FOR INCLUSION IN TDPP FY 88/89 PLAN. REF. # -> 256	TES LIMITED	50,000	11/87	
MARSHALL	STATION-BASED ACCESS DEVICE FOR INTERCITY BUS - DEVELOPMENT AND DEMONSTRATION. APPROVED FOR TDPP FUNDING. FIRST STEP: 2 CONCEPTS TO BE TESTED IN MOCK-UP FORM, ONE WORKING PROTOTYPE TO BE BUILT. REF. # -> 178	U. OF OTTAWA	75,000	06/87 08/87	PRIORITY 01. TDC'S STRONGLY COMMITTED TO UNDERTAKE THIS PROJECT AS PART OF ITS 1987/88 WORK PROGRAM.
MARSHALL	LONG TERM ACCESSIBLE BUS DEMO ON A MAJOR INTER-CITY ROUTE. TASKED BY TDPIC. MIRAGE XL AVAILABLE JAN 88 FOR 12 MONTHS. CBA IS SOLICITING CARRIERS FOR INTEREST. REF. # -> 179	MAJOR CARRIER	75,000	09/87	PRIORITY 02. THE PJ SHOULD EXPLAIN REASONS WHY MCI ACCESSIBLE BUS NOT ACCEPTABLE FOR THIS DEMO & WHY PREVIOUS DEMO'S OF EL-LIFT TECHNOLOGY HAVE NOT FURNISHED NECESSARY DATA. TDPP FUNDING ESSENTIAL.
MORGAN	ASSISTANCE TO HARD OF HEARING PASSENGERS IN TRANSPORTATION TERMINALS. REF. # -> 164	RFP	55,000	06/87 11/87	PRIORITY 02.
MORGAN	EVALUATION AND INTRODUCTION INTO SERVICE OF ADVANCED ELECTRIC WHEELCHAIR. REF. # -> 166	B.C. HYDRO	40,000	10/87	PRIORITY 02.
NISHIZAKI	AIRCRAFT BOARDING SYSTEM DEMONSTRATION. AIRPORTS AUTHORITY GROUP HAS ENDORSED THIS PHASE BASED ON USE OF A SIMPLIFIED OPEN PALLET LIFT CONCEPT. REF. # -> 77	RFP	350,000	10/85 03/86 08/86 09/87	PRIORITY 01. PROCEED WITH PJ TO DEVELOP AND EVALUATE THIS CONCEPT FOR SMALL AIRPORTS.

APPENDIX A - SECTION 3.1

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*** Liste des MENUS pour MIS ***
--------------------------------

            RAPPORT
            ANTOINE
            TDPP-EH
            STATUS REPORT
            NARRATIF
            PROJET NEGATIF
            RAP. FIN DE MOIS
            FORTIN
            ENERGY
            MAJ
```

```
*** MENU pour RAPPORT          ***
-----------------------------------

  1- Etiquette d'organisme sur "*"       2- TRANSFERER UN # DE TASK A PROJ
  3- Liste des Organismes                4- LISTE DETAILLE DES TIES/PROJET
  5- TRANSACTION FOR CONTRACTS           6- LISTE CAPAFE (ACTIF + TERMINE)
  7- LISTE CAPAFE (ACTIF SEULEMENT)      8- TRANSACTION pour un CONTRACT
  8- REFERENCE AUX ANNEES FISCALS

Choisissez une fonction->
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LES SYSTEMES SUR MESURE PB INC

4400 RUE DE SALABERRY

MONTREAL, QUEBEC
H4J 1H4

SDC INFORMATION SERVICES

2500 COLORADO AVE.

SANTA MONICA, CALIF.
90406

SYSTEMS STUDIES REGISTERED

1225 ST. MARC STREET
APT. 1307
MONTREAL, QUEBEC
H3H 2E7

3.1.1

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87/11/09 [11:54:05]                                                Page 1
                                      LISTE A DATE DES ORGANISMES
                                      ---------------------------

REF.#  NOM CIE
=====  ==============================
  101
  111
  395  AC STATPOWER INC.
  130  ACRES CONSULTING SERVICES LTD
  423  ADGA (QUEBEC) LTD.
  465  AERCOUSTICS ENGINEERING LTD.
  537  AIR BC
  246  AIR SPECIALITY CONSULTANTS
  467  AIR TREK SYSTEMS LTD.
  133  ALBERY,PULLERITS,DICKSON & LTD
  543  ALCAN INTERNATIONAL LIMITED
  134  ALPHATEXT
  287  ANDREW ANTENNA CO. LTD.
  119  APPLIED AI SYSTEMS INC.
  137  ARCTEC CANADA LIMITED
  261  ARCTEC NEWFOUNDLAND LIMITED
  117  ARCTIC RESEARCH & DEVELOPMENT
  554  ARCTIC SCIENCES LIMITED
  411  ARROW STEEL INDUSTRIES LTD
  141  ASSOC. DU CAMIONNAGE DU QUEBEC
  422  ATARA INCORPORATED
  548  AUDOR COMMUNICATION INC.
  138  AVIATION PLANNING ASSOCIATES
  277  AVIATION PLANNING SERVICES LTD
  436  B. HELM ASSOCIATES, LTD.
  146  B.C. HYDRO
  451  B.H. LEVELTON & ASSOCIATES LTD
  204  BARRINGER RESEARCH LIMITED
  351  BAYLY ENGINEERING LTD
  131  BEAUCHEMIN,BEATON,LAPOINTE INC
  142  BEHAVIOURAL TEAM
  357  BELL AEROSPACE CANADA TEXTRON
  450  BERT VAN LEEUWEN INDUSTRIAL
  288  BINARY COMMUNICATIONS INC.
  498  BLACK & MCDONALD LTD
  425  BOMBARDIER INC.
  144  BOMBARDIER-MLW LTEE
  167  BOSTON, HENRY, QUINN ASSOC.LTD
  370  BRADLEY AIR SERVICES
  268  BRITISH COLUMBIA RAILWAY
  496  BRITISH COLUMBIA TRANSIT
  224  BRITISH RAIL ENGINEERING LTD.
  145  BROWN BOVERI CANADA INC.
  474  BTM INTERNATIONAL INC.
  112  BUREAU OF MNGMENT CONSULTING
  226  C-TECH LTD
  229  C.E. BERTHIAUME TECHNOLOGIES
  233  CAE ELECTRONICS LIMITED
  147  CANADAIR LIMITED
```

3.1.2

LISTE A DATE DES ORGANISMES

REF.#	NOM CIE
255	UNIVERSITY OF CALGARY
256	UNIVERSITY OF GUELPH
252	UNIVERSITY OF MANITOBA
257	UNIVERSITY OF MONTREAL-C.R.T.
254	UNIVERSITY OF NEW BRUNSWICK
258	UNIVERSITY OF OTTAWA
156	UNIVERSITY OF SASKATCHEWAN
259	UNIVERSITY OF TORONTO
260	UNIVERSITY OF TORONTO - UTIAS
253	UNIVERSITY OF TORONTO-YORK
241	URBAN TRANSP.DEV.CORP. - UTDC
200	UTDC INC.
102	UTLAS INC.
262	VALMET ARCTIC CANADA LTD
162	VEHICULES & ROBOTS VITRI INC.
129	VIA RAIL CANADA INC.
443	VIATEC RESOURCE SYSTEMS INC.
223	VIRTUAL PROTOTYPES INC.
532	VOLKER CRAIG LTD.
336	VOYAGEUR ENTREPRISES LTD
212	VOYAGEUR INC.
552	VULCAN INDUSTRIAL PACKAGING
362	W-ION ASSOCIATES
432	W.F. BAIRD & ASSOCIATES
152	W.H. CANDLISH
397	W.R. DAVIS ENGINEERING LIMITED
454	WARNOCK HERSEY
216	WARTSILA ARCTIC INC.
497	WATERLOO RESEARCH INSTITUTE
410	WED TRANSPORTATION SYSTEMS INC
519	WELDING INSTITUTE OF CANADA
503	WEST PARK RESEARCH
243	WHITEGAITES ENGINEERING LTD
148	WINNIPEG COACH SALES

```
                                        RAPPORT SOMMAIRE 'TIES'
                                        -----------------------
PROJET :  6831      E&H PROGRAM TIES :TRANSVISION      AUTH:   24,721.00     AGENT PROJ: SUEN
CIE : TRANSVISION CONSULTANTS LTD
=============================================================================================
87/11/04 [13:41:43]
                                                                                       Page 1
Liste pour : PROJET #          :  6831
-----------------------------------------
TIES#     TITRE
                                          AMNT. AUTH    $ A DATE     BALANCE      HOLD. CUMUL.    STATUT/CAP
========  ==============================  ===========  ===========  ===========  ==============  ==========
TASK 11                                       749.15       749.15         0.00            0.00  ACTIF
TASK 7    EXPO SHUTTLE BUS MONITORING       8,235.69     8,235.69         0.00          -18.43  TERMINER
TASK 9    EVACUATION SYSTEM REVIEW         24,099.85    24,099.85         0.00           -0.02  TERMINER
                                          ===========  ===========  ===========  ==============
                                           33,084.69    33,084.69         0.00          -18.45
Total ( 3 Rec.) Pour PROJET #          =  6831

                                          ===========  ===========  ===========  ==============
                                           33,084.69    33,084.69         0.00   .      -18.45
 *** GRAND Total( 3 Rec.) ***
```

3.1.3

```
                         RAPPORT DETAILLE 'TIES'
                         -----------------------
PROJET :  6831  E#H PROGRAM TIES :TRANSVISION   HOLD:         -18.43
TIES # : TASK 7    EXPO SHUTTLE BUS MONITORING    AUTH:    8,235.69
TERMINER  BALANCE:         0.00   CIE : TRANSVISION CONSULTANTS LTD
=========================================================================
87/11/04 [13:41:52]                                                Page 1
DATE TRN  INV/AMN#    TIES OFF.    AMOUNT
========  ==========  ==========  ===========
86/07/23  TASK 7-1    SUEN           1,598.08
86/09/10  TASK 7-2    SUEN           2,366.98
86/10/09  TASK 7-3    SUEN           1,976.25
86/11/10  TASK 7-4    SUEN           1,226.20
86/12/11  TASK 7-5    SUEN           1,235.68
                                  ===========
                                     8,403.19
 ### GRAND Total( 5 Rec.) ###
```

3.1.4

```
PROJECT NO : 6831                                    RESPONSIBILITY CENTRE :257140
CONTRACTOR :                TRANSVISION CONSULTANTS LTD
P.O.- SUEN                  'E&H PROGRAM TIES :TRANSVISION '     STATUS : ACTIVE
------------------------------------------------------------------------------------
REQUISITION NO. 3-3575           R&D ACTIVITY:  9785    TDC FILE NO.:1450-103-60-4
A-I-P DATE: 83/10/24        START DATE:85/01/24   FINAL REPORT DELIVERY: 87/08/21
CONTRACT | PAID CY-2:         0.00    FUT. YRS:        0.00  TOT $ AUTH:  33,269.00
    TERMS | PAID CY-1:  33,269.00    BGT CY+1:        0.00     SPONSOR : TDPP-E&H
          | BGT  CY  :       0.00    EST $ CY:        0.00   PRINTED  [ 87/11/04]
-----------------------------------------------------------------------------------
87/11/04 [14:00:42]                                                              Page 1
DATE TRN  REF.#  TYPE   MONTH        AMOUNT       TO DATE       BALANCE     TRANS  MONTH/BILL
========  =====  =====  ==========  ===========  ===========  ===========  =====  ==========
86/11/06   9307  DEBUT  OCTOBRE      30,000.00         0.00    30,000.00      1   OCTOBRE
86/11/07   9325  AMEND  OCTOBRE        -900.00         0.00    29,100.00      2   OCTOBRE
86/11/07   9326  50738  OCTOBRE       1,155.00     1,155.00    27,945.00      3   JUILLET
86/11/07   9327  50943  OCTOBRE       1,155.00     2,310.00    26,790.00      4   AOUT
86/11/10   9330  51147  NOVEMBRE      1,155.00     3,465.00    25,635.00      5   SEPTMBRE
86/12/11   9364  51337  DECEMBRE      1,540.00     5,005.00    24,095.00      6   OCTOBRE
87/01/13   9596  AMEND  JANVIER      -5,000.00     5,005.00    19,095.00      7   JANVIER
86/07/23   8722  50512  JUILLET       1,598.08     6,603.08    17,496.92      8   JUIN
86/09/10   8907  50738  SEPTMBRE      2,366.98     8,970.06    15,129.94      9   JUILLET
86/10/09   9031  50943  OCTOBRE       1,976.25    10,946.31    13,153.69     10   AOUT
86/11/10   9328  51147  NOVEMBRE      1,226.20    12,172.51    11,927.49     11   SEPTMBRE
86/12/11   9362  51337  DECEMBRE      1,235.68    13,408.19    10,691.81     12   OCTOBRE
87/01/13   9604  AMEND  JANVIER       8,420.00    13,408.19    19,111.81     13   JANVIER
87/01/26   9609  51612  JANVIER       1,925.00    15,333.19    17,186.81     14   DECEMBRE
87/02/06   9627  51681  FEVRIER       1,540.00    16,873.19    15,646.81     15   JANVIER
87/02/20   9704  51793  FEVRIER       4,930.00    21,803.19    10,716.81     16   JANVIER
87/05/07  10246  AMEND  14 EME          749.00    21,803.19    11,465.81     17   14 EME
87/05/07   9821  50107  14 EME          749.15    22,552.34    10,716.66     18   14 EME
87/05/29   3522  50108  14 EME        6,154.85    28,707.19     4,561.81     19   MAI
87/05/29   3527  50108  14 EME           16.81    28,724.00     4,545.00     20   MAI
87/05/29   3564  50108  14 EME        4,545.00    33,269.00         0.00     21   MAI

                   LE MONTANT EN 'HOLDBACK' -> $          75.
```

3.1.5

```
87/11/04 [14:09:15]                                                                        Page 1

Liste pour : RSPB CNT          : 257110
---------------------------------------
PROJE  NOM CIE                         TIES#       AMNT. AUTH    $ A DATE     BALANCE   TIES OFF.    STATUT/CAP
=====  ==============================  ========   ===========  ===========  ==========  ==========  ==========
 6799  CANARCTIC SHIPPING LTD          CA5016        6,794.00     6,794.00        0.00  NOWICKI     TERMINER
 6832  BOMBARDIER INC.                 CA5015       11,400.00    11,400.00        0.00  NISHIZAKI   TERMINER
 6834  CANADIAN PACIFIC LIMITED        CA5017        5,500.00     5,500.00        0.00  DIBBLE      TERMINER
 6838  CANADIAN PACIFIC LIMITED        CA5018        1,250.00     1,250.00        0.00  DIBBLE      TERMINER
 6626  COLDSTREAM MARITIME INC.        CA5019        4,528.08     4,528.08        0.00  MCLAREN     TERMINER
 6719  W.R. DAVIS ENGINEERING LIMITED  CA5020       20,000.00    20,000.00        0.00  ROWAN       TERMINER
 6745  DYNAMIC SCIENCES LIMITED        CA5021       30,622.30    30,622.31        0.00  DIBBLE      TERMINER
 6600  FISHERIES RESOURCE DEVEL. LTD   CA5022       10,958.26    10,958.26        0.00  NOWICKI     TERMINER
 6026  MARYSTOWN SHIPYARD LIMITED      CA5023       10,676.56         0.00   10,676.56  NISHIZAKI   ACTIF
 6749  QUEEN'S UNIVERSITY - CIGGT      CA5024        1,660.31         0.00    1,660.31  ROWAN       ACTIF
 6566  QUEEN'S UNIVERSITY - CIGGT      CA5025        2,046.76     2,046.76        0.00  ROWAN       TERMINER
 6669  WARTSILA ARCTIC INC.            CA5026       10,996.78    10,996.78        0.00  NOWICKI     TERMINER
                                                  ===========  ===========  ==========
                                                   116,433.05   104,096.19   12,336.87
Total ( 12 Rec.) Pour RSPB CNT         = 257110


Liste pour : RSPB CNT          : 257120
---------------------------------------
PROJE  NOM CIE                         TIES#       AMNT. AUTH    $ A DATE     BALANCE   TIES OFF.    STATUT/CAP
=====  ==============================  ========   ===========  ===========  ==========  ==========  ==========
 6856  AIR BC                          CA5001       54,908.00    54,908.00        0.00  MYERS       TERMINER
 6549  CANADIAN ASTRONAUTICS LIMITED   CA5002       13,386.56    10,584.32    2,802.24  AVNI        TERMINER
 6210  DE HAVILLAND AIRCRAFT CO. CAN.  CA5003          958.03       958.03        0.00  MYERS       TERMINER
 6166  DE HAVILLAND AIRCRAFT CO. CAN.  CA5004        6,824.63         0.00    6,824.63  MYERS       ACTIF
 6724  INTERA TECHNOLOGIES LTD         CA5005       38,919.53    38,919.53        0.00  AUDETTE     TERMINER
 6844  NORDCO LIMITED                  CA5006       23,373.87    23,373.87        0.00  VERSAILLES  TERMINER
 6875  ORACLE COMMUNICATIONS INC.      CA5007        6,527.88     6,527.88        0.00  MORGAN      TERMINER
 6875  ORACLE COMMUNICATIONS INC.      CA5008        8,887.06         0.00    8,887.06  MORGAN      TERMINER
 6470  SYPHER MUELLER INTL. INC.       CA5009       23,697.26    23,697.26        0.00  MYERS       TERMINER
 6707  VIRTUAL PROTOTYPES INC.         CA5010      119,000.00   119,000.00        0.00  MYERS       TERMINER
 6706  VIRTUAL PROTOTYPES INC.         CA5011        3,057.94     3,057.94        0.00  MYERS       TERMINER
 6598  UTDC INC.                       CA5012       12,009.87    12,009.87        0.00  VERSAILLES  TERMINER
 6675  CTF SYSTEMS INC.                CA5074       75,376.02    75,376.02        0.00  AUDETTE     TERMINER
 6297  FOCAL MARINE LIMITED            CA5075        8,368.46     8,368.46        0.00  AVNI        TERMINER
 6550  CANADIAN ASTRONAUTICS LIMITED   CA5013       40,509.20    40,509.20        0.00  AVNI        TERMINER
 6840  BARRINGER RESEARCH LIMITED      CA5076       15,000.00    15,000.00        0.00  AUDETTE     TERMINER
                                                  ===========  ===========  ==========
                                                   450,804.31   432,290.38   18,513.93
Total ( 16 Rec.) Pour RSPB CNT         = 257120
```

3.1.6

```
Liste pour : RSPB CNT          : 257130
```

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87/11/04 [14:09:15]
                                                                                          Page 3
Liste pour : RSPB CNT        : 257150
-----------------------------------------
PROJE  NOM CIE                          TIES#     AMNT. AUTH    $ A DATE     BALANCE     TIES OFF.    STATUT/CAP
=====  ===============================  ========  ===========  ===========  ===========  ===========  ==========
 6864  ICE CONTROL ENTREPRISES INC.     CA5047      31,786.05    31,786.05         0.00  LAFRAMBOISE  TERMINER
 6640  ARCTEC CANADA LIMITED            CA5048      16,004.43    15,998.69         5.74  BAYLY        ACTIF
 6555  MELVILLE SHIPPING LTD            CA5049      13,784.31    13,784.31         0.00  LAFRAMBOISE  TERMINER
 6557  MELVILLE SHIPPING LTD            CA5050      41,307.45    41,307.45         0.00  LAFRAMBOISE  TERMINER
 6770  MELVILLE SHIPPING LTD            CA5051       4,982.00     4,982.00         0.00  SEMERY       TERMINER
 6853  NUNASI CORPORATION               CA5052      34,000.00    34,000.00         0.00  LAFRAMBOISE  TERMINER
 6342  SABLE MARITIME LTD               CA5053      23,661.12    23,661.12         0.00  BERTRAND     TERMINER
 6674  SEATRONICS TECHNOLOGIES LTD      CA5054      24,000.90    24,000.90         0.00  BAYLY        TERMINER
 6637  ARCTEC CANADA LIMITED            CA5014      21,638.62    21,638.62         0.00  NOWICKI      TERMINER
                                                  ===========  ===========  ===========
Total ( 18 Rec.) Pour RSPB CNT          = 257150   313,124.54   313,118.80         5.74


                                                  ===========  ===========  ===========
 *** GRAND Total( 75 Rec.) ***                    1181,322.89  1086,806.59    95,265.46
```

```
7/11/04 [13:58:37]                                                                              Page 1

iste pour : RSPB CNT          : 257110
-------------------------------------------
ROJE  NOM CIE                          TIES#      AMNT. AUTH   $ A DATE     BALANCE      TIES OFF.    STATUT/CAP
====  ===============================  ========   ===========  ===========  ===========  ===========  ==========
6026  MARYSTOWN SHIPYARD LIMITED       CA5023      10,676.56         0.00    10,676.56   NISHIZAKI    ACTIF
6749  QUEEN'S UNIVERSITY - CIGGT       CA5024       1,660.31         0.00     1,660.31   ROWAN        ACTIF
                                                  ===========  ===========  ===========
                                                   12,336.87         0.00    12,336.87
otal ( 2 Rec.) Pour RSPB CNT          = 257110


iste pour : RSPB CNT          : 257120
-------------------------------------------
ROJE  NOM CIE                          TIES#      AMNT. AUTH   $ A DATE     BALANCE      TIES OFF.    STATUT/CAP
====  ===============================  ========   ===========  ===========  ===========  ===========  ==========
6166  DE HAVILLAND AIRCRAFT CO. CAN.   CA5004       6,824.63         0.00     6,824.63   MYERS        ACTIF
                                                  ===========  ===========  ===========
                                                    6,824.63         0.00     6,824.63
otal ( 1 Rec.) Pour RSPB CNT          = 257120


iste pour : RSPB CNT          : 257130
-------------------------------------------
OJE   NOM CIE                          TIES#      AMNT. AUTH   $ A DATE     BALANCE      TIES OFF.    STATUT/CAP
====  ===============================  ========   ===========  ===========  ===========  ===========  ==========
576   PROVOST CARTAGE                  CA5032      34,408.92         0.00    34,408.92   SABOUNGHI    ACTIF
                                                  ===========  ===========  ===========
                                                   34,408.92         0.00    34,408.92
otal ( 1 Rec.) Pour RSPB CNT          = 257130


iste pour : RSPB CNT          : 257140
-------------------------------------------
OJE   NOM CIE                          TIES#      AMNT. AUTH   $ A DATE     BALANCE      TIES OFF.    STATUT/CAP
===   ===============================  ========   ===========  ===========  ===========  ===========  ==========
827   BRITISH COLUMBIA TRANSIT         CA5056      30,000.00         0.00    30,000.00   SUEN         ACTIF
                                                  ===========  ===========  ===========
                                                   30,000.00         0.00    30,000.00
tal ( 1 Rec.) Pour RSPB CNT           = 257140


iste pour : RSPB CNT          : 257150
-------------------------------------------
OJE   NOM CIE                          TIES#      AMNT. AUTH   $ A DATE     BALANCE      TIES OFF.    STATUT/CAP
====  ===============================  ========   ===========  ===========  ===========  ===========  ==========
640   ARCTEC CANADA LIMITED            CA5048      16,004.43    15,998.69         5.74   BAYLY        ACTIF
                                                  ===========  ===========  ===========
```

3.1.7

```
Liste pour : RSPB CNT          : 257120
----------------------------------------
PROJE  NOM CIE                          TIES#     AMNT. AUTH    $ A DATE     BALANCE      TIES OFF.    STATUT/CAP
=====  ===============================  ========  ===========  ===========  ===========  ===========  ==========
 6166  DE HAVILLAND AIRCRAFT CO. CAN.   CA5004       6,824.63         0.00     6,824.63  MYERS        ACTIF
                                                  ===========  ===========  ===========
                                                     6,824.63         0.00     6,824.63
Total ( 1 Rec.) Pour RSPB CNT           = 257120

Liste pour : RSPB CNT          : 257130
----------------------------------------
PROJE  NOM CIE                          TIES#     AMNT. AUTH    $ A DATE     BALANCE      TIES OFF.    STATUT/CAP
=====  ===============================  ========  ===========  ===========  ===========  ===========  ==========
 6576  PROVOST CARTAGE                  CA5032      34,408.92         0.00    34,408.92  SABOUNGHI    ACTIF
                                                  ===========  ===========  ===========
                                                    34,408.92         0.00    34,408.92
Total ( 1 Rec.) Pour RSPB CNT           = 257130

Liste pour : RSPB CNT          : 257140
----------------------------------------
PROJE  NOM CIE                          TIES#     AMNT. AUTH    $ A DATE     BALANCE      TIES OFF.    STATUT/CAP
=====  ===============================  ========  ===========  ===========  ===========  ===========  ==========
 6827  BRITISH COLUMBIA TRANSIT         CA5056      30,000.00         0.00    30,000.00  SUEN         ACTIF
                                                  ===========  ===========  ===========
                                                    30,000.00         0.00    30,000.00
Total ( 1 Rec.) Pour RSPB CNT           = 257140

Liste pour : RSPB CNT          : 257150
----------------------------------------
PROJE  NOM CIE                          TIES#     AMNT. AUTH    $ A DATE     BALANCE      TIES OFF.    STATUT/CAP
=====  ===============================  ========  ===========  ===========  ===========  ===========  ==========
 6640  ARCTEC CANADA LIMITED            CA5048      16,004.43    15,998.69         5.74  BAYLY        ACTIF
                                                  ===========  ===========  ===========
                                                    16,004.43    15,998.69         5.74
Total ( 1 Rec.) Pour RSPB CNT           = 257150

                                                  ===========  ===========  ===========
                                                    99,574.85    15,998.69    83,576.16
 *** GRAND Total( 6 Rec.) ***
```

APPENDIX A - SECTION 3.2

```
                    *** MENU pour ANTOINE          ***
                    -----------------------------------

  1- PROF.& SPEC. SER. OVER 50000         2- CALCULER LES SEMAINES EN AMEND
  3- CALCUL les semaines EN NEG.          4- LISTE PAR OFFICIER DE PROJET
  5- calcul les SEMEAINES pour AIP        6- Donne le budget TDC a date
  7- ANNUAL EXPENDITURE REPORT (AM)       8- PROJETS EN AIP ET NEG.
  9- TRANSACTION pour un CONTRACT        10- REFERENCE AUX ANNEES FISCALS

Choisissez une fonction->
```

STATEMENT OF PROFESSIONAL AND SPECIAL SERVICES OVER $50,000

CONTRACTOR : DE HAVILLAND AIRCRAFT CO. CAN.	FISCAL YEAR 1986/87
	TDC-MTL
DOWNSVIEW, ONTARIO M3K 1Y5	T8200-4-4513 CONTRACT# 6210
TYPE OF CONTRACT : RESEARCH & DEVELOPMENT	START DATE 84/05/02

PROJECT DESCRIPTION :

P.Y. EXPENDITURES	0.00	HOLDBACK IN OPEN ACCOUNT	0.00
C.Y. EXPENDITURE	131,642.69	AMOUNT OF CONTRACT	185,218.00
TOTAL EXPENDITURE	131,642.69		

DETAILS ON C.Y. EXPENDITURES

RES.NO.	ACTIVITY	WARRANT	ENCUMBRANCE	LINE OBJ.	
1066121	9706	6210	1020	2398	131,642.69
					131,642.69

3.2.1

```
7/11/04 [16:04:50]                                                                                                                              Pa

iste pour : OFF PRJT           : AUDETTE
         CSPONSOR              : TDC-01M
-------------------------------------------
OJE  PRJT TTL                        NOM CIE                         TOT$AUTH    PREV YRS    BGT $ CY    BGT$CY+1    ACT $ CY    SUSPENSE    PEND INV    BAL $ CY    STA
==== =============================== =============================== =========== =========== =========== =========== =========== =========== =========== =========== ===
5531 ICE NAVIGATION WORKSTATION      INTERA TECHNOLOGIES LTD           30,325.00   29,960.17      364.83        0.00        0.00        0.00        0.00      364.83 ACT
606  MULTI-SENSOR ICE THICK.EVAL.    CANPOLAR CONSULTANTS LTD         165,469.29   45,988.83  119,480.46        0.00  104,337.40        0.00        0.00   15,143.06 ACT
609  IMS DETECTION OF EXPLOSIVES     BARRINGER RESEARCH LIMITED        76,485.00        0.00   76,485.00        0.00   73,997.41        0.00        0.00    2,487.59 AME
621  EXPLOSIVES DET.TECH.ASSESSMENT  W-ION ASSOCIATES                  50,552.00   50,552.00        0.00        0.00        0.00        0.00        0.00        0.00 ACT
675  MAGLEV SC MAGNET CONST & TEST   CTF SYSTEMS INC.                 349,920.00  149,311.52  200,608.48        0.00   35,096.63   10,876.36        0.00  154,635.49 PRE
781  EVALUATION OF MFB SENSOR        CANPOLAR CONSULTANTS LTD          13,000.00   13,000.00        0.00        0.00        0.00        0.00        0.00        0.00 ACT
876  NAVFIX-RADAR NAVIGATION SYSTEM  OFFSHORE SYSTEMS LIMITED         196,284.00        0.00   32,617.00  163,667.00        0.00        0.00        0.00   32,617.00 ACT
918  AUTOMATED X-RAY SCREENING                                        650,000.00        0.00   25,000.00  325,000.00        0.00        0.00        0.00   25,000.00 NEG
276  COOPTDC/NRC DEV SC MAG/CO OL    NATIONAL RESEARCH COUNCIL         20,000.00   10,595.48    9,404.52        0.00    2,334.28        0.00        0.48    7,070.24 ACT
4242 SEA ICE SENSOR ELECTR. DEV.     MPB TECHNOLOGIES INC.            299,357.00  299,356.82        0.00        0.00        0.00        0.00        0.00        0.00 ACT
944  SAR USE INTERACTIVE ASSISTANCE  INTERA TECHNOLOGIES LTD          150,000.00        0.00   50,000.00  100,000.00        0.00        0.00        0.00   50,000.00 NEG
6960 TDC/CCIW MARINE-VUE & NAV-ICE   INTERA TECHNOLOGIES LTD           44,892.75        0.00   44,892.75        0.00        0.00        0.00        0.00   44,892.75 ACT
969  SONAR RETRACTABLE TRANSDUCER    C-TECH LTD                       390,000.00        0.00        0.00  390,000.00        0.00        0.00        0.00        0.00 NEG
                                                                     =========== =========== =========== =========== =========== =========== =========== ===========
                                                                      2436,285.04  598,764.82  558,853.04  978,667.00  215,765.72   10,876.36        0.48  332,210.96
tal ( 13 Rec.) Pour CSPONSOR          = TDC-01M


ste pour : OFF PRJT           : AUDETTE
        CSPONSOR              : CMTA-AM
-------------------------------------------
OJE  PRJT TTL                        NOM CIE                         TOT$AUTH    PREV YRS    BGT $ CY    BGT$CY+1    ACT $ CY    SUSPENSE    PEND INV    BAL $ CY    STAT
==== =============================== =============================== =========== =========== =========== =========== =========== =========== =========== =========== ====
504  EVALUATION OF MFB SENSOR        CANPOLAR CONSULTANTS LTD          15,000.00   15,000.00        0.00        0.00        0.00        0.00        0.00        0.00 ACTI
5574 ICE NAVIGATION SIMULATOR        INTERA TECHNOLOGIES LTD           77,000.10   77,000.10        0.00        0.00        0.00        0.00        0.00        0.00 ACTI
627  ICE NAVIGATION WORKSTATION      INTERA TECHNOLOGIES LTD           92,833.00   92,833.00        0.00        0.00        0.00        0.00        0.00        0.00 ACTI
                                                                     =========== =========== =========== =========== =========== =========== =========== ===========
                                                                      184,833.10  184,833.10        0.00        0.00        0.00        0.00        0.00        0.00
tal ( 3 Rec.) Pour CSPONSOR           = CMTA-AM
```

3.2.2

```
iste pour : OFF PRJT           : AUDETTE
         CSPONSOR              : DSS
-------------------------------------------
OJE  PRJT TTL                        NOM CIE                         TOT$AUTH    PREV YRS    BGT $ CY    BGT$CY+1    ACT $ CY    SUSPENSE    PEND INV    BAL $ CY    STAT
==== =============================== =============================== =========== =========== =========== =========== =========== =========== =========== =========== ====
877  NAVFIX-RADAR NAVIGATION SYSTEM  OFFSHORE SYSTEMS LIMITED         330,000.00        0.00  330,000.00        0.00   40,464.22   46,804.64    3,331.14  242,731.14 ACTI
                                                                     =========== =========== =========== =========== =========== =========== =========== ===========
                                                                      330,000.00        0.00  330,000.00        0.00   40,464.22   46,804.64    3,331.14  242,731.14
tal ( 1 Rec.) Pour CSPONSOR           = DSS
```

```
87/11/04 [16:05:33]
                                                                                                                                                    Pa
Liste pour : OFF PRJT          : WHITEHEAD
             CSPONSOR          : TDC-O&M
--------------------------------------------
PROJE  PRJT TTL                        NOM CIE                         TOT$AUTH    PREV YRS    BGT $ CY    BGT$CY+1    ACT $ CY    SUSPENSE    PEND INV    BAL $ CY    STA
=====  ==============================  ==============================  ==========  ==========  ==========  ==========  ==========  ==========  ==========  ==========  ===
 6192  PAVING BLOCKS - CONTINUATION    CENTRE RECH. & CONTROLE APPLI    24,300.00   24,300.00        0.00        0.00        0.00        0.00        0.00        0.00  ACT
                                                                       ==========  ==========  ==========  ==========  ==========  ==========  ==========  ==========
                                                                        24,300.00   24,300.00        0.00        0.00        0.00        0.00        0.00        0.00
Total ( 1 Rec.) Pour CSPONSOR          = TDC-O&M

Liste pour : OFF PRJT          : WHITEHEAD
             CSPONSOR          : ERDA/QUE
--------------------------------------------
PROJE  PRJT TTL                        NOM CIE                         TOT$AUTH    PREV YRS    BGT $ CY    BGT$CY+1    ACT $ CY    SUSPENSE    PEND INV    BAL $ CY    STA
=====  ==============================  ==============================  ==========  ==========  ==========  ==========  ==========  ==========  ==========  ==========  ===
 6661  GESTION CIRCULATION-METROP/DEC  SNC/DELUC/CO-ENTREPRISES        180,500.00   71,723.08  108,776.92        0.00   26,269.86    1,802.88        0.00   80,704.18  AME
                                                                       ==========  ==========  ==========  ==========  ==========  ==========  ==========  ==========
                                                                       180,500.00   71,723.08  108,776.92        0.00   26,269.86    1,802.88        0.00   80,704.18
Total ( 1 Rec.) Pour CSPONSOR          = ERDA/QUE

iste pour : OFF PRJT           : WHITEHEAD
            CSPONSOR           : CONS
--------------------------------------------
ROJE   PRJT TTL                        NOM CIE                         TOT$AUTH    PREV YRS    BGT $ CY    BGT$CY+1    ACT $ CY    SUSPENSE    PEND INV    BAL $ CY    STAT
=====  ==============================  ==============================  ==========  ==========  ==========  ==========  ==========  ==========  ==========  ==========  ====
6329   SIMUL. FERROVIAIRE PORT DE MTL  GIRO                             97,300.00   97,300.00        0.00        0.00        0.00        0.00        0.00        0.00  ACTI
                                                                       ==========  ==========  ==========  ==========  ==========  ==========  ==========  ==========
                                                                        97,300.00   97,300.00        0.00        0.00        0.00        0.00        0.00        0.00
otal ( 1 Rec.) Pour CSPONSOR           = CONS


                                                                       ==========  ==========  ==========  ==========  ==========  ==========  ==========  ==========
                                                                       302,100.00  193,323.08  108,776.92        0.00   26,269.86    1,802.88        0.00   80,704.18
otal ( 3 Rec.) Pour OFF PRJT           = WHITEHEAD


                                                                       ==========  ==========  ==========  ==========  ==========  ==========  ==========  ==========
                                                                       302,100.00  193,323.08  108,776.92        0.00   26,269.86    1,802.88        0.00   80,704.18
### GRAND Total( 3 Rec.) ###
```

```
                          ANNUAL EXPENDITURE REPORT FOR 1985/86

Liste pour : CSPONSOR          : TDC-O&M
             RSPB CNT          : 106611
-------------------------------------------
PROJE PRJT TTL                       NOM CIE                         BGT $ CY    ACT $ CY    OFF PRJT    CSPONSOR
===== ============================== ============================== =========== =========== =========== ==========
 6363 DYNAMIC STABILITY OF SHIPS     ARCTEC CANADA LIMITED                 0.00        0.00 GORE        TDC-O&M
 6602 THRUST DEDUCTION INVESTIGATION MELVILLE SHIPPING LTD                 0.00        0.00 NISHIZAKI   TDC-O&M
 6626 TIES : MARINE HYDROMECHANICS   COLDSTREAM MARITIME INC.         40,248.00   40,247.97 MCLAREN     TDC-O&M
 6663 HYDROSTATIC STERN TUBE BEARING DEPT. OF NATIONAL DEFENCE        43,955.00        0.00 GORE        TDC-O&M
 6669 SHIP TRANSITING RIDGES         WARTSILA ARCTIC INC.             75,066.00   75,066.00 NOWICKI     TDC-O&M
 6709 ICE-HULL FRICTION COEFFICIENT  MELVILLE SHIPPING LTD             4,753.00    4,753.00 NISHIZAKI   TDC-O&M
 6778 HYDROSTATIC STERN TUBE BEARING DEPT. OF NATIONAL DEFENCE         8,277.00    6,580.38 GORE        TDC-O&M
 6779 PROTECTION OF PROPELLERS IN IC W.R. DAVIS ENGINEERING LIMITED    7,833.01    7,832.39 GORE        TDC-O&M
 6780 ICE STRENGTH INDEXER           MELVILLE SHIPPING LTD               232.33        0.00 NOWICKI     TDC-O&M
 [illegible] M.V. ARCTIC '85 TESTING CANARCTIC SHIPPING LTD          111,794.00  111,794.00 NOWICKI     TDC-O&M
 [illegible] [illegible] CLASS - SCALE EFFECTS ARCTEC NEWFOUNDLAND LIMITED 15,038.09 15,038.09 NOWICKI  TDC-O&M
                                                                    =========== ===========
                                                                     307,196.43  261,311.83

Total : 11 Rec.  Pour RSPB CNT         = 106611


Liste pour : CSPONSOR          : TDC-O&M
             RSPB CNT          : 106612
-------------------------------------------
PROJE PRJT TTL                       NOM CIE                         BGT $ CY    ACT $ CY    OFF PRJT    CSPONSOR
===== ============================== ============================== =========== =========== =========== ==========
 [illegible] FIBRE OPTICS MARINE SYSTEM FOCAL MARINE LIMITED          81,557.85   81,557.85 AVNI        TDC-O&M
 [illegible] AUTOMATED RAMMING SYSTEM(RAMS) MELVILLE SHIPPING LTD          0.00        0.00 POSLUNS     TDC-O&M
 [illegible] ICE NAVIGATION WORKSTATION INTERA TECHNOLOGIES LTD       30,325.00   29,960.17 AUDETTE     TDC-O&M
 [illegible] MULTI-SENSOR ICE THICK.EVAL. CANPOLAR CONSULTANTS LTD    55,000.00   45,985.83 AUDETTE     TDC-O&M
 [illegible] EVALUATION OF MFB SENSOR  CANPOLAR CONSULTANTS LTD       13,000.00   13,000.00 AUDETTE     TDC-O&M
                                                                    =========== ===========
                                                                     179,882.85  170,506.85

Total ( 5 Rec.) Pour RSPB CNT          = 106612


Liste pour : CSPONSOR          : TDC-O&M
             RSPB CNT          : 106615
-------------------------------------------
PROJE PRJT TTL                       NOM CIE                         BGT $ CY    ACT $ CY    OFF PRJT    CSPONSOR
===== ============================== ============================== =========== =========== =========== ==========
 4239 HULL CORROSION                 B.H. LEVELTON & ASSOCIATES LTD        0.00        0.00 BAYLY       TDC-O&M
 4273 BARGE INTACT STABILITY         ROBERT ALLAN LTD.,                    0.00        0.00 BAYLY       TDC-O&M
 6003 PROPELLER/ICE FE MODEL PHASE 2 MARTEC LIMITED                       15.68       11.43 BAYLY       TDC-O&M
 6322 US POLAR CLASS PROGRAM 84/85   ARCTEC CANADA LIMITED             2,012.44    2,004.51 BAYLY       TDC-O&M
 6356 SEGMENTED MODEL ICE TESTS II   ARCTEC CANADA LIMITED                 0.00        0.00 BAYLY       TDC-O&M
 6381 MAB SEMINAR MV ARCTIC          PEIRCE OPERATIONAL DYNAMICS           0.00        0.00 BERTRAND    TDC-O&M
 6535 HF/ARCTIC SHIP SAFETY MEASUR'T POLAR SEA RESEARCH LIMITED        1,392.26    1,391.63 BAYLY       TDC-O&M
```

3.2.3

```
                         ANNUAL EXPENDITURE REPORT FOR 1985/86

Liste pour : CSPONSOR        : TDC-EXT
             RSPB CNT        : 106615
-------------------------------------------
PROJE PRJT TTL                      NOM CIE                          BGT $ CY    ACT $ CY    OFF PRJT    CSPONSOR
===== ============================= ============================== =========== =========== =========== ==========
 6772 ICE PROP. SHAFT DYNAMIC       ARCTEC CANADA LIMITED             50,000.00   50,000.00 SEMERY      TDC-EXT
                                                                   =========== ===========
                                                                    213,000.00  212,999.49
Total ( 6 Rec.) Pour RSPB CNT       = 106615

                                                                   =========== ===========
                                                                    448,000.00  447,999.49
Total ( 11 Rec.) Pour CSPONSOR      = TDC-EXT

                                                                   =========== ===========
                                                                   2356,242.28 2287,243.14
 *** GRAND Total( 29 Rec.) ***
```

```
87/11/05 (08:36:01)                                                                                     Page 1
                       POSITIVE SPONSOR RECORDS IN AIP & NEGOTIATION STATUS.

Liste pour : CSPONSOR         : TDC-01M
             RSPB CNT         : 257110
----------------------------------------
PROJE NOM CIE                        SPONS. ORG. NAME               PRJT TTL                        TOT$AUTH     EST $ CY     BGT $ CY     STATUS      OFF PRJT
===== ============================== ============================== ============================== ============ ============ ============ =========== ===========
 6934                                TRANSPORT DEV. CENTRE          ARCTIC STRUCTURES CORROSION      25,000.00         0.00         0.00 NEGOTIAT    GORE
 6940 SNC INC.                       SANS 'ORGANISME PARRAINANT'    WHEEL CRACK DETECTION SYSTEM     65,000.00         0.00         0.00 NEGOTIAT    GORE
 6975 MAUGHAN RLY CNSLTG SERV INC.   TRANSPORT DEV. CENTRE          TIES: RAIL FREIGHT R&D           50,000.00    25,000.00    25,000.00 NEGOTIAT    MCLAREN
 6992 QUEEN'S UNIVERSITY - CIGGT     TRANSPORT DEV. CENTRE          TIES: RAIL SYSTEMS RESEARCH     300,000.00    50,000.00         0.00 APP-I-PP    ROWAN
 6907                                ENERGY MINES AND RESOURCES     ROCKFALL HAZARDS SURVEY           5,000.00     5,000.00     5,000.00 NEGOTIAT    ROWAN
                                                                                                ============ ============ ============
                                                                                                  445,000.00    80,000.00    30,000.00
Total ( 5 Rec.) Pour RSPB CNT          = 257110


Liste pour : CSPONSOR         : TDC-01M
             RSPB CNT         : 257120
----------------------------------------
PROJE NOM CIE                        SPONS. ORG. NAME               PRJT TTL                        TOT$AUTH     EST $ CY     BGT $ CY     STATUS      OFF PRJT
===== ============================== ============================== ============================== ============ ============ ============ =========== ===========
 6944 INTERA TECHNOLOGIES LTD        TRANSPORT DEV. CENTRE          SAR USE INTERACTIVE ASSISTANCE  150,000.00    50,000.00    50,000.00 NEGOTIAT    AUDETTE
 6956 KOM INC.                       TRANSPORT DEV. CENTRE          DIGITAL VOICE AND DATA LOGGER    75,000.00    10,000.00    10,000.00 NEGOTIAT    POSLUNS
 6969 C-TECH LTD                     TRANSPORT DEV. CENTRE          SONAR RETRACTABLE TRANSDUCER    390,000.00         0.00         0.00 NEGOTIAT    AUDETTE
 7004                                TRANSPORT DEV. CENTRE          LANDING ON NARROW AIRSTRIPS     132,000.00    40,000.00         0.00 APP-I-PP    MYERS
 6995                                TRANSPORT DEV. CENTRE          ELT FIELD TRIALS                110,000.00    44,000.00         0.00 APP-I-PP    POSLUNS
 6055                                TRANSPORT DEV. CENTRE          HIGH SPEED RAIL DICTIONARY       20,000.00    20,000.00         0.00 APP-I-PP    MORGAN
 6874 SNC INC.                       TRANSPORT DEV. CENTRE          COMM/COMP/ELEC(TIES) SNC INC.   130,000.00         0.00    10,000.00 NEGOTIAT    POSLUNS
 6918                                TRANSPORT DEV. CENTRE          AUTOMATED X-RAY SCREENING       650,000.00    25,000.00    25,000.00 NEGOTIAT    AUDETTE
                                                                                                ============ ============ ============
                                                                                                 1657,000.00   189,000.00    95,000.00
Total ( 8 Rec.) Pour RSPB CNT          = 257120


Liste pour : CSPONSOR         : TDC-01M
             RSPB CNT         : 257130
----------------------------------------
PROJE NOM CIE                        SPONS. ORG. NAME               PRJT TTL                        TOT$AUTH     EST $ CY     BGT $ CY     STATUS      OFF PRJT
===== ============================== ============================== ============================== ============ ============ ============ =========== ===========
 6978 MOTOR COACH INDUSTRIES         TRANSPORT DEV. CENTRE          PROTOTYPE 45FT INTERCITY BUS    160,000.00         0.00         0.00 NEGOTIAT    MARSHALL
 6991 IN-HOUSE-TDT TECH.APPLICATIONS TRANSPORT DEV. CENTRE          COLLOQUE CONJOINT AQTR/MTQ/CDT        0.00         0.00         0.00 APP-I-PP    RICHARD
 6993 IN-HOUSE-TDT TECH.APPLICATIONS TRANSPORT DEV. CENTRE          RAIL SAFETY STDS. APPLICATIONS        0.00         0.00         0.00 APP-I-PP    VESPA
 6915 RMS INDUSTRIAL CONTROLS INC.   TRANSPORT DEV. CENTRE          CELLULAR RADIO TRACKING         209,000.00         0.00         0.00 NEGOTIAT    SABOUNGHI
                                                                                                ============ ============ ============
                                                                                                  369,000.00         0.00         0.00
Total ( 4 Rec.) Pour RSPB CNT          = 257130
```

3.2.4

```
87/11/05 (08:36:01)                                                                                              Page 7
                          POSITIVE SPONSOR RECORDS IN AIP & NEGOTIATION STATUS.

Liste pour : CSPONSOR         : TDC-EXT
             RSPB CNT         : 257150
-----------------------------------------
PROJE NOM CIE                        SPONS. ORG. NAME                PRJT TTL                          TOT$AUTH    EST $ CY    BGT $ CY    STATUS     OFF PRJT
===== ============================== =============================== ================================= =========== =========== =========== ========== ===========
 6974 MELVILLE SHIPPING LTD          NATIONAL RESEARCH COUNCIL       ICEBREAKER MID-BODY RESISTANCE      35,000.00   35,000.00   35,000.00 NEGOTIAT   PEIRCE
 6988 MELVILLE SHIPPING LTD          APP-I-PP                        ARCTIC SURVIVAL SLED                15,000.00   15,000.00        0.00 APP-I-PP   RICHARD
 6989                                APP-I-PP                        INFORMATION SYSTEMS ANALYSIS        60,000.00   40,000.00        0.00 APP-I-PP   RICHARD
 7003 ARCTEC NEWFOUNDLAND LIMITED    APP-I-PP                        RIDGE MODELLING                     30,000.00   30,000.00        0.00 APP-I-PP   PEIRCE
                                                                                                       =========== =========== ===========
                                                                                                        155,000.00  135,000.00   50,000.00
Total ( 5 Rec.) Pour RSPB CNT       = 257150


                                                                                                       =========== =========== ===========
                                                                                                        679,800.00  255,000.00  120,000.00
Total ( 11 Rec.) Pour CSPONSOR      = TDC-EXT


                                                                                                       =========== =========== ===========
                                                                                                       9829,909.00 3466,845.04 2057,845.04
 *** GRAND Total( 67 Rec.) ***
```

```
87/11/05 [08:30:45]
                        NEGATIVE SPONSOR RECORDS IN AIP & NEGOTIATION STATUS.                              Page 1

Liste pour : CSPONSOR        : TCM
             RSPB CNT        : 257110
------------------------------------------
PROJE  SPONS. ORG. NAME              PRJT TTL                        TOT$AUTH     EST $ CY     BAL $ CY     STATUS      OFF PRJT
=====  ============================  ==============================  ===========  ===========  ===========  ==========  ========
 6937  APP-I-PP                      ARCTIC STRUCTURES CORROSION     -25,000.00   -25,000.00         0.00   APP-I-PP    GORE
                                                                     ===========  ===========  ===========
                                                                     -25,000.00   -25,000.00         0.00
Total ( 1 Rec.) Pour RSPB CNT          = 257110

Liste pour : CSPONSOR        : TCM
             RSPB CNT        : 257150
------------------------------------------
PROJE  SPONS. ORG. NAME              PRJT TTL                        TOT$AUTH     EST $ CY     BAL $ CY     STATUS      OFF PRJT
=====  ============================  ==============================  ===========  ===========  ===========  ==========  ========
 6950  APP-I-PP                      ICE BLOCKAGE OF SHROUDED PROPS  -20,000.00         0.00         0.00   APP-I-PP    SEMERY
 6987  APP-I-PP                      ARCTIC SURVIVAL SLED            -15,000.00   -15,000.00         0.00   APP-I-PP    RICHARD
                                                                     ===========  ===========  ===========
                                                                     -35,000.00   -15,000.00         0.00
Total ( 2 Rec.) Pour RSPB CNT          = 257150

                                                                     ===========  ===========  ===========
                                                                     -60,000.00   -40,000.00         0.00
Total ( 3 Rec.) Pour CSPONSOR          = TCM

Liste pour : CSPONSOR        : TCAP
             RSPB CNT        : 257110
------------------------------------------
PROJE  SPONS. ORG. NAME              PRJT TTL                        TOT$AUTH     EST $ CY     BAL $ CY     STATUS      OFF PRJT
=====  ============================  ==============================  ===========  ===========  ===========  ==========  ========
 6983  APP-I-PP                      STUDY OF CMA FOR AIRPORT USE    -50,000.00   -50,000.00         0.00   APP-I-PP    DIBBLE
 6999  CATA                          ANALYSIS OF RUNWAY ROUGHNESS    -50,000.00   -25,000.00   -25,000.00   NEGOTIAT    DIBBLE
                                                                     ===========  ===========  ===========
                                                                     -100000.00   -75,000.00   -25,000.00
Total ( 2 Rec.) Pour RSPB CNT          = 257110

Liste pour : CSPONSOR        : TCAP
             RSPB CNT        : 257120
------------------------------------------
PROJE  SPONS. ORG. NAME              PRJT TTL                        TOT$AUTH     EST $ CY     BAL $ CY     STATUS      OFF PRJT
=====  ============================  ==============================  ===========  ===========  ===========  ==========  ========
 7009  APP-I-PP                      LANDING ON NARROW AIRSTRIPS     -40,000.00         0.00         0.00   APP-I-PP    MYERS
                                                                     ===========  ===========  ===========
```

3.2.5

```
Total ( 2 Rec.) Pour RSPB CNT          = 257120


Liste pour : CSPONSOR          : OTHER DEPT
             RSPB CNT          : 257150
----------------------------------------------
PROJE  SPONS. ORG. NAME                 PRJT TTL                          TOT$AUTH     EST $ CY     BAL $ CY    STATUS      OFF PRJT
=====  ==============================  ================================  ===========  ===========  ===========  ==========  ========
 7002  APP-I-PP                         RIDGE MODELLING                   -30,000.00   -30,000.00         0.00  APP-I-PP    PEIRCE
                                                                          ===========  ===========  ===========
                                                                          -30,000.00   -30,000.00         0.00
Total ( 1 Rec.) Pour RSPB CNT          = 257150


                                                                          ===========  ===========  ===========
                                                                          -95,000.00   -50,000.00         0.00
Total ( 4 Rec.) Pour CSPONSOR          = OTHER DEPT


Liste pour : CSPONSOR          : OTHER TC
             RSPB CNT          : 257150
----------------------------------------------
PROJE  SPONS. ORG. NAME                 PRJT TTL                          TOT$AUTH     EST $ CY     BAL $ CY    STATUS      OFF PRJT
=====  ==============================  ================================  ===========  ===========  ===========  ==========  ========
 6990  APP-I-PP                         INFORMATION SYSTEMS ANALYSIS      -60,000.00   -40,000.00         0.00  APP-I-PP    RICHARD
                                                                          ===========  ===========  ===========
                                                                          -60,000.00   -40,000.00         0.00
Total ( 1 Rec.) Pour RSPB CNT          = 257150


                                                                          ===========  ===========  ===========
                                                                          -60,000.00   -40,000.00         0.00
Total ( 1 Rec.) Pour CSPONSOR          = OTHER TC


Liste pour : CSPONSOR          : PROV/MUN
             RSPB CNT          : 257120
----------------------------------------------
PROJE  SPONS. ORG. NAME                 PRJT TTL                          TOT$AUTH     EST $ CY     BAL $ CY    STATUS      OFF PRJT
=====  ==============================  ================================  ===========  ===========  ===========  ==========  ========
 7008  APP-I-PP                         LANDING ON NARROW AIRSTRIPS       -10,000.00         0.00         0.00  APP-I-PP    MYERS
                                                                          ===========  ===========  ===========
                                                                          -10,000.00         0.00         0.00
Total ( 1 Rec.) Pour RSPB CNT          = 257120


                                                                          ===========  ===========  ===========
                                                                          -10,000.00         0.00         0.00
Total ( 1 Rec.) Pour CSPONSOR          = PROV/MUN


                                                                          ===========  ===========  ===========
                                                                          -784800.00   -275000.00   -85,000.00
 *** GRAND Total( 19 Rec.) ***
```

APPENDIX A - SECTION 3.3

```
                       *** MENU pour TDPP-EH          ***
                       ----------------------------------

  1- MAJ ET IMPRESSION RAPPORT E&H       2- TRANSACTION pour un CONTRACT
  3- REFERENCE AUX ANNEES FISCALS

Choisissez une fonction->
```

```
DATE: 87/08/17                  TDC DISABLED AND ELDERLY RESEARCH PROJECTS 1987/88                    PAGE:    1
                                ==================================================

                                    POUR LA PERIODE SE TERMINANT LE  31 JUILLET 1987

PROGRAM:   ACCESSIBILITY OF VEHICLES
PROGRAMME: ACCESSIBILITE
----------------------------------------------------
                                                                         AMOUNT TO    AMOUNT
PROJ #  CONTRACTOR                      PROJECT TITLE                    BE RECOUPED  RECOUPED   BGT & CY  STATUS    AUTHORIZED
------  ------------------------------  -------------------------------- -----------  ---- --   --------  --------  ----------
6823    MANOP SERVICES LTD.             MULTIPURPOSE VEHICLE DEMO              3,446     8,484    52,358  ACTIVE        50,400
                                                                         ===========  ========  ========            ==========
                                                     PROGRAM'S TOTAL:          3,446     8,484    52,358                50,400

PROGRAM:   LEVEL CHANGE TECHNOLOGIES
PROGRAMME: TRANSPORT VERTICAL
----------------------------------------------------
6825    DE LEUW CATHER CANADA LTD       TRANSFER CHAIR EVALUATION              1,050    24,000    29,000  ACTIVE        24,000
                                                                         ===========  ========  ========            ==========
                                                     PROGRAM'S TOTAL:          1,050    24,000    29,000                24,000

PROGRAM:   SAFETY MEASURES FOR THE E&D
PROGRAMME: SECURITE DES PERSONNES EN FAUTEUIL ROULANT
----------------------------------------------------
6722    TES LIMITED                     WHEELCHAIR SECUREMENT SYSTEM               0         0   110,000  AMENDMNT     135,500
                                                                         ===========  ========  ========            ==========
                                                     PROGRAM'S TOTAL:              0         0   110,000               135,500

PROGRAM:   ELIMINATION OF TRAVEL BARRIERS
PROGRAMME: ELIMINATION DES BARRIERES
----------------------------------------------------
6619    SHAND ENRG.                     COQUILLE DE VOYAGE                     7,534    15,053    24,737  ACTIVE        25,000
6887    CDN NATL. INST. FOR THE BLIND   ORIENTATION IN TRANSP. TECH.               0         0    49,726  ACTIVE        50,000
                                                                         ===========  ========  ========            ==========
                                                     PROGRAM'S TOTAL:          7,534    15,053    74,463                75,000

PROGRAM:   TECHNICAL AIDS
PROGRAMME: AIDES TECHNIQUES AUX VOYAGEURS HANDICAPES
----------------------------------------------------
6703    CAE ELECTRONICS LIMITED         AUTOMOBILE DRIVING SIMULATOR               0         0   129,000  PRE-AMEN     129,000
                                                                         ===========  ========  ========            ==========
                                                     PROGRAM'S TOTAL:              0         0   129,000               129,000

PROGRAM:   WHEELCHAIR RESEARCH AND DEVELOPMENT
PROGRAMME:
----------------------------------------------------
6360    B.C. HYDRO                      DEVELPT MOLI WHEELCHAIR                    0    19,845    67,380  ACTIVE        67,400
6716    W.R. DAVIS ENGINEERING LIMITED  IN-FLIGHT WHEELCHAIR STORAGE               0         0     8,474  ACTIVE         8,500
                                                                         ===========  ========  ========            ==========
                                                     PROGRAM'S TOTAL:              0    19,845    75,854                75,900
```

3.3.1

```
DATE: 87/08/17                TDC DISABLED AND ELDERLY RESEARCH PROJECTS 1987/88                              PAGE:    2
                              ==================================================

                                     POUR LA PERIODE SE TERMINANT LE  31 JUILLET 1987

PROGRAM:   DSS FEES
PROGRAMME: FRAIS DE SERVICE DU M.A.S.
----------------------------------------------------
                                                                           AMOUNT TO   AMOUNT
PROJ #  CONTRACTOR                      PROJECT TITLE                      BE RECOUPED RECOUPED  BGT $ CY STATUS   AUTHORIZED
------  ------------------------------  ----------------------------------  ----------- --------  -------- -------  ----------
 6926   SANS CONTRACTANT                DSS FEES E&H 1987-88                         0         0    40,000 ACTIVE      40,000
                                                                           =========== ========  ========          ==========
                                                 PROGRAM'S TOTAL:                    0         0    40,000             40,000


                                                                           ----------  --------  --------          ----------
                                                 GRAND TOTAL                    12,831    67,384   510,676            529,800
                                                                           ==========  ========  ========          ==========
```

APPENDIX A - SECTION 3.4

```
*** MENU pour STATUS REPORT    ***
-----------------------------------

 1- Preparation du "Status Report"      2- refait SETSTATREP/un # contrat
 3- RECUPERATION RPT. D'EVOLUTION       4- TEST d'impression STATUS RPT
 5- Rpt. Des Status Sans Remarques      6- "STATUS REPORT" production
 7- STATUS REPORT ORDONNE PAR MODE      8- FIXE LES LIENS pour REMARQUE
 9- TRANSACTION pour un CONTRACT       10- REFERENCE AUX ANNEES FISCALS

Choisissez une fonction->
```

LISTE DES CONTRATS DONT LES DEPENSES ET LES ESTIMES DEPASSENT LEUR ' BUDGET POUR L'ANNEE'

3.4.1

```
                                                                                                        97/09/06 [16:10:29]
                                       Page 1

Liste pour : RSFR CNT        : 257110
------------------------------------------
PROJE  OFF PRJT    NOM CIE                              TOT$AUTH     PREV YRS     INT $ CY     ACT $ CY     SUSPENSE     UNPD INV      EST BAL
=====  ==========  ===================================  ===========  ===========  ===========  ===========  ===========  ===========  ===========
 6747  DIRPLE      NATIONAL RESEARCH COUNCIL                 741.27         0.00        -0.02         0.00         0.00         0.00        -0.02
                                                        ===========  ===========  ===========  ===========  ===========  ===========  ===========
                                                             741.27         0.00        -0.02         0.00         0.00         0.00        -0.02
Total ( 1 Rec.) Pour RSFR CNT         = 257110

                                                        ===========  ===========  ===========  ===========  ===========  ===========  ===========
                                                             741.27         0.00        -0.02         0.00         0.00         0.00        -0.02
 *** GRAND Total( 1 Rec.) ***
```

Status · R+Pc

5
6

```
                PRODUCTION DU RAPPORT D'EVOLUTION
                ---------------------------------
                     (Monthly status report)
Le but de ce programme est de produire le rapport d'evolution mensuel
sur un ficher externe appele:" OUTPUT.MIS ".
Une fois le rapport produit, on peut imprimer le fichier" OUTPUT.MIS ".
La procedure d'impression vous sera communique a la fin de cette session.
Il est preferable de soumettre le rapport a l'execution apres les heures de
travail, car seul l'execution prend environ 45 MINUTES.

 Au debut, une date vous sera demande, c'est la date du rapport il faut
repondre dans le format suivant, EX: JAN. 31/87  puis pressez " RETURN ".
 Ou si vous ne desirez pas produire le rapport, tapez @ et pressez " RETURN "
pour retourner au menu.
```

Transports Canada Transport Canada

CENTRE DE DÉVELOPPEMENT DES TRANSPORTS
TRANSPORTATION DEVELOPMENT CENTRE

RAPPORT D'ÉVOLUTION
STATUS REPORT

EDTDC

PAGE 1

PÉRIODE - PERIOD SEPT 30/87

25'100

RENDEMENT PRÉSENT - CURRENT PERFORMANCE

IDENTIFICATION		FONDS - FUNDS		PLAN D'ACTIVITÉS ACTIVITY SCHEDULE	COÛTS COST	PROGRÈS PROGRESS	RAPPORT DU RESPONSABLE MONTHLY REPORT
Nº DE CONTRAT/CONTRACT NO STATUT CONTRACTUEL/STATUS	Nº DE DOSSIER/FILE NO CONTRAT/CONTRACT	TOTALS - TOTAL 1 + 2	ANNUELS-ANNUAL				
CDT - TDC 6672 ACTIVE	1683-15 6-6543	AUTORISÉ - AUTHORIZED 1. 59,675.00 CHANGEMENT - CHANGE 2. 0.00 MODE PROG.SUP	AA PY 0.00 (RÉELS - ACTUALS) AC CY 59,675.00 AP NY 0.00 AF FY 0.00	A-O-P A-I-P • 86/03/06 DEMANDE ÉMISE REQUISITION ISSUED • 86/10/31 DÉBUT DU CONTRAT CONTRACT START • 87/09/01 AMENDEMENT AMENDMENT • 00/00/00 RAPP. PRÉLIMINAIRE DRAFT REPORT • 88/01/01 RAPPORT FINAL FINAL REPORT • 88/02/15	CONTRACTÉS TOTAL INCURRED 3 3,000.00 DÉBOURSÉS - PAID 0.00 PART DU CDT TDC SHARE %	TECHNIQUE TECHNICAL % RÉALISÉ-ACHIEVED COÛTS COSTS 5% 3 — (1+2) PLAN TIME 17% RÉALISÉ ACHIEVED	87/09/10 POSLUNS

TITRE / TITLE
TDC COMP SYSTEM EVALUATION

AVEC - WITH
DIGI-PLUS INC.

BUT PURPOSE
5120

TO DEVELOP AND MAINTAIN A COMPUTERIZED MANAGEMENT INFORMATION SYSTEM WHICH WILL FACILITATE TIMELY AND ACCURATE MONITORING, REPORTING AND FINANCIAL CONTROL OF TDC'S R&D PROGRAM. TO REVIEW MIS SYSTEM AND FUTURE DEVELOPMENT OPTIONS. TO UPDATE THE TDC PROCEDURES MANUAL.

SPONSOR
TDC-O&M

FISCAL YEAR
PY - PREVIOUS
CY - CURRENT
NY - NEXT
FY - FUTURE

CDT - TDC	AUTORISÉ - AUTHORIZED 1. CHANGEMENT - CHANGE 2. MODE	AA PY (RÉELS - ACTUALS) AC CY AP NY AF FY	A-O-P A-I-P • DEMANDE ÉMISE REQUISITION ISSUED • DÉBUT DU CONTRAT CONTRACT START • AMENDEMENT AMENDMENT • RAPP. PRÉLIMINAIRE DRAFT REPORT • RAPPORT FINAL FINAL REPORT •	CONTRACTÉS TOTAL INCURRED 3. DÉBOURSÉS PAID PART DU CDT TDC SHARE %	TECHNIQUE TECHNICAL % RÉALISÉ-ACHIEVED COÛTS COSTS % 3 — (1+2) PLAN TIME % RÉALISÉ ACHIEVED	

TITRE / TITLE

AVEC - WITH

BUT PURPOSE

ANNÉE FINANCIÈRE
AA ANTÉRIEURE
AP PROCHAINE
AF FUTURE

CDT - TDC	AUTORISÉ AUTHORIZED	AA PY (RÉELS - ACTUALS)	ADP AIP •	CONTRACTÉS TOTAL INCURRED	TECHNIQUE TECHNICAL	

3.4.2

Transports Canada Transport Canada

CENTRE DE DÉVELOPPEMENT DES TRANSPORTS
TRANSPORTATION DEVELOPMENT CENTRE

RAPPORT D'ÉVOLUTION
STATUS REPORT

TST

PÉRIODE - PERIOD SEPT 30/87

257150

IDENTIFICATION	FONDS - FUNDS	PLAN D'ACTIVITÉS ACTIVITY SCHEDULE	COÛTS COST	PROGRÈS PROGRESS	RAPPORT DU RESPONSABLE MONTHLY REPORT
CDT - TDC 6951 1460-251 NEGOTIAT 7-7523 ICE BLOCKAGE OF SHROUDED PROPS ARCTIC RESEARCH & DEVELOPMENT	AUTORISÉ - AUTHORIZED 20,000.00 CHANGEMENT - CHANGE 0.00 MODE MARINE 0.00 RÉELS - ACTUALS 0.00 20,000.00 0.00	A·B·P A·I·P 87/06/29 87/07/27 00/00/00 00/00/00 00/00/00 00/00/00	CONTRACTÉS TOTAL INCURRED 0.00 DÉBOURSÉS - PAID 0.00 PART DU CDT TDC SHARE % SPONSOR TDC-EXT	TECHNIQUE TECHNICAL % RÉALISÉ ACHIEVED COÛTS COSTS 0% PLAN TIME 0% RÉALISÉ ACHIEVED	00/00/00 SEMERY CONTRACT SIGNED BY DSS ON THE 15 SEPTEMBER 1987.

BUT PURPOSE TO ADVANCE THE STATE-OF-THE-ART AND PERFORMANCE CAPABILITIES OF MARINE VEHICLES USED BY GOVERNMENTS OR BY INDUSTRY FOR SAFE AND EFFICIENT YEAR-ROUND OPERATION IN ARCTIC WATERS OF CANADIAN INTEREST.

M113

IDENTIFICATION	FONDS - FUNDS	PLAN D'ACTIVITÉS ACTIVITY SCHEDULE	COÛTS COST	PROGRÈS PROGRESS	RAPPORT DU RESPONSABLE MONTHLY REPORT
CDT - TDC 6976 1460-254 APP-I-PP APP-I-PP ICE LOADS ON PROPELLER BLADES GEOTECHNICAL RESOURCES LTD	AUTORISÉ - AUTHORIZED 110,000.00 CHANGEMENT - CHANGE 0.00 MODE MARINE 0.00 RÉELS - ACTUALS 30,000.00 80,000.00 0.00	A·B·P A·I·P 87/08/24 00/00/00 87/10/01 00/00/00 00/00/00 88/12/01	CONTRACTÉS TOTAL INCURRED 0.00 DÉBOURSÉS - PAID 0.00 PART DU CDT TDC SHARE % SPONSOR TDC-O&M	TECHNIQUE TECHNICAL % RÉALISÉ ACHIEVED COÛTS COSTS 0% PLAN TIME 0% RÉALISÉ ACHIEVED	00/00/00 SEMERY DSS REQUISITION IS IN WAITING FOR WORD OF CONTRACTOR.

BUT PURPOSE TO CONTRIBUTE TO THE DEVELOPMENT OF A SCIENTIFIC DATA BASE FOR DESIGN OR OPERATING CRITERIA APPLICABLE TO REGULATIONS REGARDING MARINE OPERATIONS IN ARCTIC WATERS OF CANADIAN INTEREST.

M111

IDENTIFICATION	FONDS - FUNDS	PLAN D'ACTIVITÉS ACTIVITY SCHEDULE	COÛTS COST	PROGRÈS PROGRESS	RAPPORT DU RESPONSABLE MONTHLY REPORT
CDT - TDC 6977 1460-254 APP-I-PP APP-I-PP ICE LOADS ON PROPELLER BLADES GEOTECHNICAL RESOURCES LTD	110,000.00 0.00 MARINE 0.00 110,000.00 0.00 0.00	A·B·P A·I·P 07/08/24 00/00/00 07/10/01 00/00/00 00/00/00 88/12/01	0.00 0.00 SPONSOR	0	00/00/00 SEMERY DSS REQUISITION IS IN WAITING FOR WORD OF CONTRACTOR.

TO CONTRIBUTE TO THE DEVELOPMENT OF A SCIENTIFIC DATA BASE FOR DESIGN OR OPERATING CRITERIA APPLICABLE TO REGULATIONS REGARDING MARINE OPERATIONS IN ARCTIC WATERS OF CANADIAN INTEREST.

M111

11T40

Transports Canada Transport Canada

CENTRE DE DÉVELOPPEMENT DES TRANSPORTS
TRANSPORTATION DEVELOPMENT CENTRE

RAPPORT D'ÉVOLUTION
STATUS REPORT

EDTDC

PAGE 1

PÉRIODE - PERIOD SEPT 30/87

25 100

IDENTIFICATION		FONDS - FUNDS		PLAN D'ACTIVITÉS ACTIVITY SCHEDULE	RENDEMENT PRÉSENT - CURRENT PERFORMANCE COÛTS COST	PROGRÈS PROGRESS	RAPPORT DU RESPONSABLE MONTHLY REPORT
6672	1483-15	AUTORISÉ - AUTHORIZED 59,675.00	0.00	86/03/04	3,000.00	TECHNIQUE TECHNICAL	87/09/10 POSLUNS
ACTIVE	6-6543	CHANGEMENT - CHANGE 0.00	RÉELS - ACTUALS 59,675.00	86/10/31	0.00	COÛTS COSTS 5	-CONTRACTOR CONTINUES TO INTERVIEW 'MIS' USERS.
TITRE / TITLE TDC COMP SYSTEM EVALUATION		PROD.SUP	0.00	87/09/01		PLAN TIME 17	-PRELIMINARY COST ESTIMATES EXPECTED BY SEPT 30TH /87 FOR TRANSMISSION TO MIKE BAKER.
DIGI-PLUS INC.			0.00	00/00/00			
				88/01/01			
				88/02/15			

FISCAL YEAR

OBJET PURPOSE

5120 TO DEVELOP AND MAINTAIN A COMPUTERIZED MANAGEMENT INFORMATION SYSTEM WHICH WILL FACILITATE TIMELY AND ACCURATE MONITORING, REPORTING AND FINANCIAL CONTROL OF TDC'S R&D PROGRAM. TO REVIEW MIS SYSTEM AND FUTURE DEVELOPMENT OPTIONS. TO UPDATE THE TDC PROCEDURES MANUAL.

SPONSOR TDC-DSM

ANNÉE FINANCIÈRE

3.4.3

Transports Canada Transport Canada

CENTRE DE DÉVELOPPEMENT DES TRANSPORTS
TRANSPORTATION DEVELOPMENT CENTRE

RAPPORT D'ÉVOLUTION
STATUS REPORT

TST

PÉRIODE - PERIOD SEPT 30/87

257150

IDENTIFICATION	FONDS - FUNDS TOTALE - TOTAL	FONDS - FUNDS ANNUELS	PLAN D'ACTIVITÉS ACTIVITY SCHEDULE	COÛTS COST	PROGRÈS PROGRESS	RAPPORT DU RESPONSABLE MONTHLY REPORT
6931 1460-251 NEGOTIAT 7-7523 ICE BLOCKAGE OF SHROUDED PROPS ARCTIC RESEARCH & DEVELOPMENT	20,000.00 0.00 MARINE	0.00 0.00 20,000.00 0.00	• 87/06/29 • 87/07/27 • 00/00/00 • 00/00/00 • 00/00/00 • 00/00/00	0.00 0.00 %	% 0% 0%	00/00/00 SEMERY

TO ADVANCE THE STATE-OF-THE-ART AND PERFORMANCE CAPABILITIES OF MARINE VEHICLES USED BY GOVERNMENTS OR BY INDUSTRY FOR SAFE AND
M113 EFFICIENT YEAR-ROUND OPERATION IN ARCTIC WATERS OF CANADIAN INTEREST.

SPONSOR TDC-EXT

IDENTIFICATION	FONDS - FUNDS TOTALE - TOTAL	FONDS - FUNDS ANNUELS	PLAN D'ACTIVITÉS ACTIVITY SCHEDULE	COÛTS COST	PROGRÈS PROGRESS	RAPPORT DU RESPONSABLE MONTHLY REPORT
6976 1460-254 APP-I-PP APP-I-PP ICE LOADS ON PROPELLER BLADES GEOTECHNICAL RESOURCES LTD	110,000.00 0.00 MARINE	0.00 30,000.00 80,000.00 0.00	• 87/08/24 • 00/00/00 • 87/10/01 • 00/00/00 • 00/00/00 • 88/12/01	0.00 0.00 %	% 0% 0%	00/00/00 SEMERY

TO CONTRIBUTE TO THE DEVELOPMENT OF A SCIENTIFIC DATA BASE FOR DESIGN OR OPERATING CRITERIA APPLICABLE TO REGULATIONS REGARDING MARINE
M111 OPERATIONS IN ARCTIC WATERS OF CANADIAN INTEREST.

SPONSOR TDC-OSM

IDENTIFICATION	FONDS - FUNDS TOTALE - TOTAL	FONDS - FUNDS ANNUELS	PLAN D'ACTIVITÉS ACTIVITY SCHEDULE	COÛTS COST	PROGRÈS PROGRESS	RAPPORT DU RESPONSABLE MONTHLY REPORT
6977 1460-254 APP-I-PP APP-I-PP ICE LOADS ON PROPELLER BLADES GEOTECHNICAL RESOURCES LTD	110,000.00 0.00 MARINE	0.00 110,000.00 0.00 0.00	• 07/08/24 • 08/00/00 87/10/01 • 00/00/00 • 00/00/00 • 88/12/01	0.00 0.00	% 0	00/00/00 SEMERY

TO CONTRIBUTE TO THE DEVELOPMENT OF A SCIENTIFIC DATA BASE FOR DESIGN OR OPERATING CRITERIA APPLICABLE TO REGULATIONS REGARDING MARINE
M111 OPERATIONS IN ARCTIC WATERS OF CANADIAN INTEREST.

SPONSOR

APPENDIX A - SECTION 3.5

```
                    *** MENU pour NARRATIF          ***
                    -----------------------------------

  1- DUPLICATER UNE REMARQUE               2- duplicater un " SCOPE "
  3- ELIMINER UNE REMARQUE                 4- Duplicater un "PURPOSE"
  5- Modification d'un "Purpose"           6- EDIT d'un "PROJECT OBJECTIVE"
  7- EDIT d'un "SCOPE"                     8- Duplicater un "PROJ .Obj."
  9- Creation des SCOPE & PROJ.OBJ.       10- Entree les "REMARQUES"
 11- PROFILE SHEET VERIFICATION           12- MODIF d'un "PROJECT OBJECTIVE"
 13- MODIFICATION d'un "SCOPE"            14- MODIF.DE L'ADRESSE D'ORGAMINSM
 15- TRANSACTION pour un CONTRACT         16- REFERENCE AUX ANNEES FISCALS

Choisissez une fonction->
```

TRANSPORT CANADA
TRANSPORTATION DEVELOPMENT CENTRE
PROJECT PROFILE SHEET

PRINTED 87/11/09

PROJECT TITLE : ICE NAVIGATION WORKSTATION
PROJECT VALUE : 400,158.00
PERFORMER : INTERA TECHNOLOGIES LTD
PROJECT OFFICER : AUDETTE
DSS OFFICE : DSS-MTL
RSPB CENTRE : 257120
FILE # : 1460-228
REQ # : 5-5530
PROJECT STATUS : ACTIVE
AIP DATE : 85/07/16
SIGN DATE : 85/09/20
DRAFT REPORT : 87/10/19
FINAL REPORT : 87/10/27

REMARQUES

PRINTED REPORTS DELIVERED.
PROBLEMS WITH RDF. ALL ELSE OK.
6531/6532/6627

MODAL SUBOBJECTIVE

M112
CONTRIBUTION TO THE DEVELOPMENT OF AN INFRASTRUCTURE FOR YEAR-ROUND ARCTIC NAVIGATION
- TO OBTAIN TECHNICAL AND ENVIRONMENTAL DATA AND TO DEVELOP TECHNOLOGICAL CONCEPTS REQUIRED TO ENSURE SAFE, EFFICIENT AND RELIABLE NAVIGATION SERVICES TO SHIPPING IN ARCTIC WATERS OF CANADIAN INTEREST.

PROJECT OBJECTIVE

TO UPGRADE AND EVALUATE BOTH THE MARINE RADAR IMAGE DISPLAY SYSTEM (RIDS) AND THE INTERA SAR DOWNLINK RECEIVER/SOFTCOPY DISPLAY SYSTEM (STARVUE) AS PART OF AN IMPROVED AND SAFER ICE NAVIGATION SYSTEM.

SCOPE

THIS PROJECT WILL FURTHER DEVELOP AND UPGRADE TWO CRITICAL COMPONENTS OF THE ICE NAVIGATION SYSTEM AS PREVIOUSLY DETAILED BY THE MIDAS PROJECT. THE FIRST SUB-SYSTEM, THE NEW DOWNLINK RECEIVER/SOFTCOPY DISPLAY NOW BEING BUILT BY INTERA (STARVUE), PERFORMS MANY USEFUL FUNCTIONS BUT ADDITIONAL FEATURES ARE NEEDED FOR MARINE APPLICATIONS.

PROJ.#	SPONSOR	PREV. YEARS	EST $ CY	EST $ CY+1	EST $ FY	TOT $ AUTH.
6627	CMTA-AM	92,833.00	0.00	0.00	0.00	92,833.00
6531	TDC-O&M	29,960.17	0.00	0.00	0.00	30,325.00
6532	TRNS	276,882.70	0.00	0.00	0.00	277,000.00

3.5.1

APPENDIX A - SECTION 3.6

```
                 *** MENU pour PROJET NEGATIF   ***
                 ------------------------------------

  1- MOD MNT DEJA RECU. DES NEGATIF     2- RECUPERATION DES PROJETS NEG.
  3- TRANSACTION pour un CONTRACT       4- REFERENCE AUX ANNEES FISCALS

Choisissez une fonction->
```

```
87/11/02                                   RECUPERATION-RAPPORT DES MESURES PRISES                        PAGE :  1
                                           =======================================

CENTRE DE RESPONSABILITE : 257110

-------------------------------------------------------------------------------------------------------------------------------------
#PROJ| #PROJ/ENT| NOM SPONS | TITRE DU PROJET               | STATUT    | MNT DEPENSE | ACT $ CY    | BGT $ CY      | MNT A RECOUVRER | MNT RECUPERE
-------------------------------------------------------------------------------------------------------------------------------------
6585|           |           |ATC WORK STATION PROTOTYPE     |ACTIVE     |  17,841.71  |  90,641.89 |  150,328.61|                 |
    |  6586     | TCAV      |                               |ACTIVE     |             |            |  -150000.00|     -17,841.71  |  -90,641.89
-------------------------------------------------------------------------------------------------------------------------------------
6998|           |           |ANALYSIS OF RUNWAY ROUGHNESS   |NEGOTIAT   |       0.00  |       0.00 |   25,000.00|                 |
    |  6999     | TCAP      |                               |NEGOTIAT   |             |            |  -50,000.00|           0.00  |        0.00
-------------------------------------------------------------------------------------------------------------------------------------
6806|           |           |HIGHWAY SNOW DRIFT CONTROL     |ACTIVE     |       0.00  |       0.00 |   42,500.00|                 |
    |  6809     | OTHER DEPT|                               |ACTIVE     |             |            |   -5,000.00|           0.00  |        0.00
    |  6810     | OTHER DEPT|                               |ACTIVE     |             |            |   -5,000.00|           0.00  |        0.00
    |  6811     | PROV/MUN  |                               |ACTIVE     |             |            |  -10,000.00|           0.00  |        0.00
    |  6891     | PROV/MUN  |                               |ACTIVE     |             |            |  -10,000.00|           0.00  |        0.00
    |  6807     | TCS       |                               |ACTIVE     |             |            |  -12,500.00|           0.00  |        0.00
-------------------------------------------------------------------------------------------------------------------------------------
6836|           |           |DANGEROUS GOODS ACCIDENT MODEL |ACTIVE     |       0.00  |  23,842.18 |   79,100.00|                 |
    |  6837     | TCS       |                               |ACTIVE     |             |            |  -79,100.00|           0.00  |  -23,842.18
-------------------------------------------------------------------------------------------------------------------------------------

          TOTAL POUR LE CENTRE DE RESPONSABILITE : 257110          17,841.71                                  -17,841.71      -114484.07
                                   POUR LA PERIODE SE TERMINANT LE: OCT. 31/87
```

3.6.1

```
87/11/02                                           RECUPERATION-RAPPORT DES MESURES PRISES                          PAGE :  5
                                                   =======================================

CENTRE DE RESPONSABILITE : 257150

------------------------------------------------------------------------------------------------------------------------------
#PROJ| #PROJ/ENT| NOM SPONS | TITRE DU PROJET                | STATUT   | MNT DEPENSE  | ACT $ CY     | BGT $ CY      | MNT A RECOUVRER | MNT RECUPERE
------------------------------------------------------------------------------------------------------------------------------
6954|           |           |SMOKE MASK                      |NEGOTIAT  |        0.00  |        0.00 |   15,000.00|                 |
    |  6955     | TCAV      |                                |ACTIVE    |              |             |  -15,000.00|            0.00 |         0.00
------------------------------------------------------------------------------------------------------------------------------
6865|           |           |DEGLACAGE-PORT DE CHICOUTIMI    |ACTIVE    |        0.00  |        0.00 |        0.00|                 |
    |  6866     | OTHER TC  |                                |ACTIVE    |              |             |  -12,000.00|            0.00 |   -12,000.00
------------------------------------------------------------------------------------------------------------------------------
6974|           |           |ICEBREAKER MID-BODY RESISTANCE  |NEGOTIAT  |        0.00  |        0.00 |   35,000.00|                 |
    |  6973     | OTHER DEPT|                                |ACTIVE    |              |             |  -35,000.00|            0.00 |         0.00
------------------------------------------------------------------------------------------------------------------------------

          TOTAL POUR LE CENTRE DE RESPONSABILITE : 257150            0.00                                        0.00      -12,000.00

                               GRAND TOTAL :                    87,472.75                                  -60,062.15      -300027.96
```

```
87/11/02 [14:55:04]
                              LISTE DES PROJETS NEGATIFS                                                                           Page 1

Liste pour : RSPB CNT           : 257110
-------------------------------------------
PROJE  SPONS. ORG. NAME                   TOT$AUTH      PREV YRS      BGT $ CY      ACT $ CY      SUSPENSE      BAL $ CY      BGT$FUT
=====  ===============================  ===========   ===========   ===========   ===========   ===========   ===========   ===========
 6999  CATA                              -50,000.00          0.00    -50,000.00          0.00          0.00    -50,000.00          0.00
 6586  CATA                              -200000.00    -50,000.00    -150000.00    -25,925.83    -46,874.35    -77,199.82          0.00
 6837  T.C. TRANSP. OF DANGEROUS GOOD    -79,100.00          0.00    -79,100.00          0.00    -23,842.18    -55,257.82          0.00
 6807  DGSH                              -25,000.00          0.00    -12,500.00          0.00          0.00    -12,500.00    -12,500.00
 6809  ENVIRONMENT CANADA                -10,000.00          0.00     -5,000.00          0.00          0.00     -5,000.00     -5,000.00
 6810  INDIAN AND NORTHERN AFFAIRS       -10,000.00          0.00     -5,000.00          0.00          0.00     -5,000.00     -5,000.00
 6811  NORTHWEST TERRITORIES             -18,500.00          0.00    -10,000.00          0.00          0.00    -10,000.00     -8,500.00
 6891  NORTHWEST TERRITORIES             -20,000.00          0.00    -10,000.00          0.00          0.00    -10,000.00    -10,000.00
                                        ===========   ===========   ===========   ===========   ===========   ===========   ===========
                                         -412600.00    -50,000.00    -321600.00    -25,925.83    -70,716.53    -224957.64    -41,000.00
Total ( 8 Rec.) Pour RSPB CNT          = 257110
```

3.6.2

```
87/11/02 [14:55:04]                                                                                         Page 3
                              LISTE DES PROJETS NEGATIFS

Liste pour : RSPB CNT         : 257150
-----------------------------------------
PROJE  SPONS. ORG. NAME                  TOT$AUTH      PREV YRS      BGT $ CY      ACT $ CY      SUSPENSE      BAL $ CY      BGT$FUT
=====  ==============================   ===========   ===========   ===========   ===========   ===========   ===========   ===========
 6866  PORTS CANADA                      -12,000.00          0.00    -12,000.00    -12,000.00          0.00          0.00          0.00
 6973  NATIONAL RESEARCH COUNCIL         -35,000.00          0.00    -35,000.00          0.00          0.00    -35,000.00          0.00
 6955  CATA                              -15,000.00          0.00    -15,000.00          0.00          0.00    -15,000.00          0.00
                                        ===========   ===========   ===========   ===========   ===========   ===========   ===========
                                         -62,000.00          0.00    -62,000.00    -12,000.00          0.00    -50,000.00          0.00
Total ( 3 Rec.) Pour RSPB CNT           = 257150

                                        ===========   ===========   ===========   ===========   ===========   ===========   ===========
                                        -1785826.00    -400324.00   -1219642.00    -84,638.23    -155327.58    -979676.19    -165860.00
 *** GRAND Total( 26 Rec.) ***
```

APPENDIX A - SECTION 3.7

```
                    *** MENU pour RAP. FIN DE MOIS ***
                    ----------------------------------

  1- MISE A ZERO DES RETENUES (I37)     2- CARTES MAITRESSE POUR UN CNTR.
  3- TOUTES LES CARTES MAITRESSES       4- CARTE MAITRESSE/#PROJET/#MOIS
  5- LIST OF CONTRACTORS FOR MGNT       6- LISTE MODAL/SPONS SPONS/MODAL
  7- LISTE "NBGTSMRY"                   8- LISTE "NBGTSMRY" PAR MODE
  9- IMPRESSION DES RECONCILIATIONS    10- TRANSACTION pour un CONTRACT
 11- REFERENCE AUX ANNEES FISCALS

Choisissez une fonction->
```

```
                    CARTE MAITRESSE

                       PROJ.ACT

87/11/05 [14:54:19]                                              Page 1

Liste pour : CNT RSPB           : 257100
             MOIS               : AVRIL
------------------------------------------
DATE JRS  NOPRO  NOM CIE                        BGT AC       BGT AF
========  =====  =============================  ===========  ===========
87/05/25   6373  SUPPLY & SERVICES CANADA          1,941.00         0.00
87/05/25   6409  SUPPLY & SERVICES CANADA              0.00         0.00
87/05/25   6604  SUPPLY & SERVICES CANADA         18,000.00         0.00
87/05/25   6605  SUPPLY & SERVICES CANADA              0.00         0.00
87/05/25   6657  LES SYSTEMES SUR MESURE PB INC   53,183.51         0.00
87/05/25   6672                                   70,000.00         0.00
87/05/25   6888  LES SYSTEMES SUR MESURE PB INC  200,000.00         0.00
                                                ===========  ===========
                                                 343,124.51         0.00
Total ( 7 Rec.) Pour MOIS          = AVRIL


Liste pour : CNT RSPB           : 257100
             MOIS               : MAI
------------------------------------------
DATE JRS  NOPRO  NOM CIE                        BGT AC       BGT AF
========  =====  =============================  ===========  ===========
87/06/05   6672                                        0.00         0.00
                                                ===========  ===========
                                                       0.00         0.00
Total ( 1 Rec.) Pour MOIS          = MAI


Liste pour : CNT RSPB           : 257100
             MOIS               : JUIN
------------------------------------------
DATE JRS  NOPRO  NOM CIE                        BGT AC       BGT AF
========  =====  =============================  ===========  ===========
87/06/15   6924                                 -1205484.90         0.00
87/06/15   6922                                 -1229218.53  -1466781.47
87/06/16   6925  SANS CONTRACTANT                125,000.00         0.00
87/06/16   6927                                   50,000.00         0.00
87/06/16   6928  SANS CONTRACTANT                 30,000.00         0.00
87/06/16   6929  SANS CONTRACTANT                 10,000.00         0.00
87/06/16   6925  SANS CONTRACTANT                      0.00         0.00
87/06/16   6927                                        0.00         0.00
87/06/16   6928  SANS CONTRACTANT                      0.00         0.00
87/06/16   6929  SANS CONTRACTANT                      0.00         0.00
87/06/17   6924  SANS CONTRACTANT                      0.00         0.00
87/07/10   6924  SANS CONTRACTANT                -230304.68         0.00
87/07/10   6924  SANS CONTRACTANT                      0.00         0.00
87/07/10   6922  SANS CONTRACTANT                -128409.00   128,409.00
                                                ===========  ===========
                                                -2578417.11  -1338372.47
Total ( 14 Rec.) Pour MOIS         = JUIN


Liste pour : CNT RSPB           : 257100
             MOIS               : JUILLET
------------------------------------------
DATE JRS  NOPRO  NOM CIE                        BGT AC       BGT AF
========  =====  =============================  ===========  ===========
87/07/14   6923                                  -791813.97         0.00
```

3.7.1

```
Liste Pour : CNT RSPB            : 257100
             MOIS                : OCTOBRE
------------------------------------------
DATE JRS  NOPRO  NOM CIE                         BGT AC       BGT AF
========  =====  ==============================  ===========  ===========
07/10/29   6925                                         0.00         0.00
                                                 ===========  ===========
                                                  -45,000.00         0.00
Total ( 2 Rec.) Pour MOIS              = OCTOBRE

                                                 ===========  ===========
                                                 -4218909.01   -998356.43
Total ( 47 Rec.) Pour CNT RSPB         = 257100

                                                 ===========  ===========
                                                 -4218909.01   -998356.43
 *** GRAND Total( 47 Rec.) ***
```

```
                      CARTE MAITRESSE

                      PROJECTS ACTIFS


Liste pour : CNT RSPB         : 257100
             MOIS             : AVRIL
------------------------------------------
DATE JRS  NOPRO  NOM CIE                           BGT AC       BGT AF
========  =====  ==============================  ===========  ===========
87/05/25   6373  SUPPLY & SERVICES CANADA           1,941.00         0.00
87/05/25   6409  SUPPLY & SERVICES CANADA               0.00         0.00
87/05/25   6604  SUPPLY & SERVICES CANADA          18,000.00         0.00
87/05/25   6605  SUPPLY & SERVICES CANADA               0.00         0.00
87/05/25   6657  LES SYSTEMES SUR MESURE PB INC    53,183.51         0.00
87/05/25   6672                                    70,000.00         0.00
87/05/25   6888  LES SYSTEMES SUR MESURE PB INC   200,000.00         0.00
                                                 ===========  ===========
                                                  343,124.51         0.00
Total ( 7 Rec.) Pour MOIS              = AVRIL


Liste pour : CNT RSPB         : 257100
             MOIS             : MAI
------------------------------------------
DATE JRS  NOPRO  NOM CIE                           BGT AC       BGT AF
========  =====  ==============================  ===========  ===========
87/06/05   6672                                         0.00         0.00
                                                 ===========  ===========
                                                        0.00         0.00
Total ( 1 Rec.) Pour MOIS              = MAI


Liste pour : CNT RSPB         : 257100
             MOIS             : JUIN
------------------------------------------
DATE JRS  NOPRO  NOM CIE                           BGT AC       BGT AF
========  =====  ==============================  ===========  ===========
87/07/10   6922  SANS CONTRACTANT                 -128409.00   128,409.00
87/06/15   6922                                  -1229218.53  -1466781.47
87/07/10   6924  SANS CONTRACTANT                 -230304.68         0.00
87/07/10   6924  SANS CONTRACTANT                       0.00         0.00
87/06/15   6924                                  -1205484.90         0.00
87/06/17   6924  SANS CONTRACTANT                       0.00         0.00
87/06/16   6925  SANS CONTRACTANT                 125,000.00         0.00
87/06/16   6925  SANS CONTRACTANT                       0.00         0.00
87/06/16   6927                                    50,000.00         0.00
87/06/16   6927                                         0.00         0.00
87/06/16   6928  SANS CONTRACTANT                  30,000.00         0.00
87/06/16   6928  SANS CONTRACTANT                       0.00         0.00
87/06/16   6929  SANS CONTRACTANT                  10,000.00         0.00
87/06/16   6929  SANS CONTRACTANT                       0.00         0.00
                                                 ===========  ===========
                                                 -2578417.11  -1338372.47
Total ( 14 Rec.) Pour MOIS             = JUIN
```

```
                         CARTE MAITRESSE

                        PROJECTS ACTIFS

Liste Pour : CNT RSPB          : 257150
             MOIS              : OCTOBRE
-----------------------------------------
DATE JRS  NOPRO  NOM CIE                            BGT AC       BGT AF
========  =====  ==============================  ===========  ===========
87/10/13   6783  VALMET ARCTIC CANADA LTD           3,500.00         0.00
87/10/21   6783  VALMET ARCTIC CANADA LTD               0.00         0.00
87/10/21   6946                                         0.00     2,942.00
87/10/07   6948  ARCTIC RESEARCH & DEVELOPMENT          0.00    -2,092.00
87/10/07   6949  ARCTIC RESEARCH & DEVELOPMENT          0.00         0.00
87/10/07   6951  ARCTIC RESEARCH & DEVELOPMENT          0.00         0.00
87/10/21   6953                                    75,000.00    15,450.00
87/10/21   6954                                    15,000.00         0.00
87/10/19   6964                                         0.00    57,200.00
87/10/19   6965                                    50,000.00         0.00
87/10/26   6976  GEOTECHNICAL RESOURCES LTD             0.00  [illegible]65.00
87/11/04   6976  GEOTECHNICAL RESOURCES LTD       115,000.00   -113000.00
87/10/26   6977  GEOTECHNICAL RESOURCES LTD             0.00         0.00
                                                 ===========  ===========
                                                  261,500.00  17[illegible]65.00
Total ( 13 Rec.) Pour MOIS              = OCTOBRE


                                                 ===========  ===========
                                                 1146,049.49   432,550.00
Total ( 135 Rec.) Pour CNT RSPB         = 257150


                                                 ===========  ===========
                                                 [illegible]  [illegible]
 *** GRAND Total( 911 Rec.) ***
```

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BCY 1,146,049

BFY 432,550

```
87/11/05 [09:23:43]                                                          Page 1
                              CARTE MAITRESSE

                            PROJECTS COMPLETES

Liste Pour : CNT RSPB            : 257100
             MOIS                : AOUT
-----------------------------------------
DATE JRS  NOPRO  NOM CIE                          MST AC       ACT-CY
========  =====  ==============================  ===========  ===========
87/08/12   6657  LES SYSTEMES SUR MESURE PB INC    53,088.50    53,088.50
                                                 ===========  ===========
                                                   53,088.50    53,088.50
Total ( 1 Rec.) Pour MOIS            = AOUT


                                                 ===========  ===========
                                                   53,088.50    53,088.50
Total ( 1 Rec.) Pour CNT RSPB        = 257100
```

Cartes ma

ACT. CY. 53

✓

```
                         CARTE MAITRESSE

                       PROJECTS COMPLETES

  Liste pour : CNT RSPB               : 257150
               MOIS                   : MAI
  -----------------------------------------
  DATE JRS  NOPRO  NOM CIE
  ========  =====  ==============================    BGT AC       ACT-CY
  87/06/02   6322  ARCTEC CANADA LIMITED           ===========  ===========
  87/06/02   6700  MELVILLE SHIPPING LTD                  0.00         0.00
                                                          0.00         0.00
                                                   ===========  ===========
  Total ( 2 Rec.) Pour MOIS               = MAI           0.00         0.00


  Liste pour : CNT RSPB               : 257150
               MOIS                   : AOUT
  -----------------------------------------
  DATE JRS  NOPRO  NOM CIE
  ========  =====  ==============================    BGT AC       ACT-CY
  87/08/26   6555  MELVILLE SHIPPING LTD           ===========  ===========
  87/08/26   6557  MELVILLE SHIPPING LTD                  0.00         0.00
                                                          0.00         0.00
                                                   ===========  ===========
  Total ( 2 Rec.) Pour MOIS               = AOUT          0.00         0.00


  Liste pour : CNT RSPB               : 257150
               MOIS                   : SEPTEMBR
  -----------------------------------------
  DATE JRS  NOPRO  NOM CIE
  ========  =====  ==============================    BGT AC       ACT-CY
  87/09/17   6737  ARCTEC CANADA LIMITED           ===========  ===========
  87/09/17   6738  ARCTEC CANADA LIMITED                  0.00         0.00
  87/09/21   6772  ARCTEC CANADA LIMITED                  0.00         0.00
  87/09/25   6893                                         0.00         0.00
                                                          0.00         0.00
                                                   ===========  ===========
  Total ( 4 Rec.) Pour MOIS               = SEPTEMBR      0.00         0.00


  Liste pour : CNT RSPB               : 257150
               MOIS                   : OCTOBRE
  -----------------------------------------
  DATE JRS  NOPRO  NOM CIE
  ========  =====  ==============================    BGT AC       ACT-CY
  87/10/26   6977  GEOTECHNICAL RESOURCES LTD      ===========  ===========
                                                          0.00         0.00
                                                   ===========  ===========
  Total ( 1 Rec.) Pour MOIS               = OCTOBRE       0.00         0.00


                                                   ===========  ===========
  Total ( 9 Rec.) Pour CNT RSPB           = 257150        0.00         0.00


                                                   ===========  ===========
  *** GRAND Total( 50 Rec.) ***                     103,622.55   103,620.77
```

Carles

ACT-CY ..

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                              CARTE MAITRESSE

                            CONTRIBUTIONS ACTIVES

Liste pour : CNT RSPB          : 257120
             MOIS              : MAI
------------------------------------------
DATE JRS  NOPRO  NOM CIE                        BGT AC       BGT AF
========  =====  =============================  ===========  ===========
87/06/09   6647  CP CONSULTING SERVICES LTD       26,583.56         0.00
87/06/09   6775  BOMBARDIER INC.                 277,662.87   720,000.00
                                                ===========  ===========
                                                 304,246.43   720,000.00
Total ( 2 Rec.) Pour MOIS              = MAI


Liste pour : CNT RSPB          : 257120
             MOIS              : JUIN
------------------------------------------
DATE JRS  NOPRO  NOM CIE                        BGT AC       BGT AF
========  =====  =============================  ===========  ===========
87/07/08   6647  CP CONSULTING SERVICES LTD           0.00         0.00
87/07/08   6775  BOMBARDIER INC.                      0.00         0.00
87/06/25   6854  BOMBARDIER INC.                 425,380.85   425,000.00
87/07/08   6854  BOMBARDIER INC.                      -0.85         0.85
                                                ===========  ===========
                                                 425,380.00   425,000.85
Total ( 4 Rec.) Pour MOIS              = JUIN


Liste pour : CNT RSPB          : 257120
             MOIS              : JUILLET
------------------------------------------
DATE JRS  NOPRO  NOM CIE                        BGT AC       BGT AF
========  =====  =============================  ===========  ===========
87/07/27   6854  BOMBARDIER INC.                      0.00         0.85
                                                ===========  ===========
                                                      0.00         0.85
Total ( 1 Rec.) Pour MOIS              = JUILLET


Liste pour : CNT RSPB          : 257120
             MOIS              : AOUT
------------------------------------------
DATE JRS  NOPRO  NOM CIE                        BGT AC       BGT AF
========  =====  =============================  ===========  ===========
87/09/09   6854  BOMBARDIER INC.                  27,000.00        -0.85
                                                ===========  ===========
                                                  27,000.00        -0.85
Total ( 1 Rec.) Pour MOIS              = AOUT


Liste pour : CNT RSPB          : 257120
             MOIS              : SEPTEMBR
------------------------------------------
DATE JRS  NOPRO  NOM CIE                        BGT AC       BGT AF
========  =====  =============================  ===========  ===========
87/09/10   6647  CP CONSULTING SERVICES LTD       22,478.00         0.00
                                                ===========  ===========
                                                  22,478.00         0.00
Total ( 1 Rec.) Pour MOIS              = SEPTEMBR
```

```
                         CARTE MAITRESSE

                      CONTRIBUTIONS ACTIVES


Liste pour : CNT RSPB           : 257130
             MOIS               : MAI
-------------------------------------------
DATE JRS  NOPRO  NOM CIE                          BGT AC       BGT AF
========  =====  ===============================  ===========  ===========
87/06/09   6661  SNC/DELUC/CO-ENTREPRISES           53,276.92         0.00
87/06/10   6661  SNC/DELUC/CO-ENTREPRISES                0.00         0.00
87/06/09   6728  VOYAGEUR INC.                      10,720.05         0.00
                                                  ===========  ===========
                                                    63,996.97         0.00

Total ( 3 Rec.) Pour MOIS              = MAI


Liste pour : CNT RSPB           : 257130
             MOIS               : SEPTEMBR
-------------------------------------------
DATE JRS  NOPRO  NOM CIE                          BGT AC       BGT AF
========  =====  ===============================  ===========  ===========
87/09/17   6661  SNC/DELUC/CO-ENTREPRISES           55,500.00         0.00
                                                  ===========  ===========
                                                    55,500.00         0.00

Total ( 1 Rec.) Pour MOIS              = SEPTEMBR


Liste pour : CNT RSPB           : 257130
             MOIS               : OCTOBRE
-------------------------------------------
DATE JRS  NOPRO  NOM CIE                          BGT AC       BGT AF
========  =====  ===============================  ===========  ===========
87/10/09   6942                                    736,000.00  1513,000.00
87/10/09   6942                                          0.00   200,000.00
                                                  ===========  ===========
                                                   736,000.00  1713,000.00

Total ( 2 Rec.) Pour MOIS              = OCTOBRE

                                                  ===========  ===========
                                                   855,496.97  1713,000.00

Total ( 6 Rec.) Pour CNT RSPB          = 257130

                                                  ===========  ===========
                                                  1634,601.40  2858,000.85

  *** GRAND Total( 16 Rec.) ***
```

```
Liste pour : CNT RSPB          : 257100
             MOIS              : AVRIL
-----------------------------------------------
DATE JRS  NOPRO  NOM CIE                          BGT AC       BGT AF
========  =====  ==============================   ===========  ===========
87/05/25   6373  SUPPLY & SERVICES CANADA            1,941.00         0.00
                                                  ===========  ===========
                                                     1,941.00         0.00
Total ( 1 Rec.) Pour MOIS            = AVRIL

                                                  ===========  ===========
                                                     1,941.00         0.00
Total ( 1 Rec.) Pour CNT RSPB        = 257100

                                                  ===========  ===========
                                                     1,941.00         0.00
 *** GRAND Total( 1 Rec.) ***
```

3.7.3

```
87/11/05 [14:41:26]                                                        Page 1
REF.#  NOM CIE                          OGN.T  TITRE
=====  ==============================   =====  =====================================
  395  AC STATPOWER INC.                    6  CANADIAN INDUSTRY - MANUFACTURERS
  130  ACRES CONSULTING SERVICES LTD        5  CANADIAN INDUSTRY - CONSULTANTS
  423  ADGA (QUEBEC) LTD.                   5  CANADIAN INDUSTRY - CONSULTANTS
  465  AERCOUSTICS ENGINEERING LTD.         5  CANADIAN INDUSTRY - CONSULTANTS
  537  AIR BC                               7  CANADIAN INDUSTRY - OPERATORS
  246  AIR SPECIALITY CONSULTANTS           5  CANADIAN INDUSTRY - CONSULTANTS
  467  AIR TREK SYSTEMS LTD.                6  CANADIAN INDUSTRY - MANUFACTURERS
  133  ALBERY,PULLERITS,DICKSON & LTD       5  CANADIAN INDUSTRY - CONSULTANTS
  543  ALCAN INTERNATIONAL LIMITED          6  CANADIAN INDUSTRY - MANUFACTURERS
  134  ALPHATEXT                            8  CANADIAN INDUSTRY - OTHERS
  287  ANDREW ANTENNA CO. LTD.              6  CANADIAN INDUSTRY - MANUFACTURERS
  119  APPLIED AI SYSTEMS INC.              5  CANADIAN INDUSTRY - CONSULTANTS
  137  ARCTEC CANADA LIMITED                5  CANADIAN INDUSTRY - CONSULTANTS
  261  ARCTEC NEWFOUNDLAND LIMITED          5  CANADIAN INDUSTRY - CONSULTANTS
  117  ARCTIC RESEARCH & DEVELOPMENT        5  CANADIAN INDUSTRY - CONSULTANTS
  554  ARCTIC SCIENCES LIMITED              6  CANADIAN INDUSTRY - MANUFACTURERS
  411  ARROW STEEL INDUSTRIES LTD           6  CANADIAN INDUSTRY - MANUFACTURERS
  141  ASSOC. DU CAMIONNAGE DU QUEBEC       4  OTHER NON - PROFIT INSTITUTES
  422  ATARA INCORPORATED                   6  CANADIAN INDUSTRY - MANUFACTURERS
  548  AUDOR COMMUNICATION INC.             6  CANADIAN INDUSTRY - MANUFACTURERS
  138  AVIATION PLANNING ASSOCIATES         5  CANADIAN INDUSTRY - CONSULTANTS
  277  AVIATION PLANNING SERVICES LTD       5  CANADIAN INDUSTRY - CONSULTANTS
  436  B. HELM ASSOCIATES, LTD.             5  CANADIAN INDUSTRY - CONSULTANTS
  146  B.C. HYDRO                           8  CANADIAN INDUSTRY - OTHERS
  451  B.H. LEVELTON & ASSOCIATES LTD       5  CANADIAN INDUSTRY - CONSULTANTS
  204  BARRINGER RESEARCH LIMITED           6  CANADIAN INDUSTRY - MANUFACTURERS
  351  BAYLY ENGINEERING LTD                6  CANADIAN INDUSTRY - MANUFACTURERS
  131  BEAUCHEMIN,BEATON,LAPOINTE INC       5  CANADIAN INDUSTRY - CONSULTANTS
  142  BEHAVIOURAL TEAM                     5  CANADIAN INDUSTRY - CONSULTANTS
  357  BELL AEROSPACE CANADA TEXTRON        6  CANADIAN INDUSTRY - MANUFACTURERS
  450  BERT VAN LEEUWEN INDUSTRIAL          5  CANADIAN INDUSTRY - CONSULTANTS
  285  BINARY COMMUNICATIONS INC.           5  CANADIAN INDUSTRY - CONSULTANTS
  498  BLACK & MCDONALD LTD                 6  CANADIAN INDUSTRY - MANUFACTURERS
  144  BOMBARDIER-MLW LTEE                  6  CANADIAN INDUSTRY - MANUFACTURERS
  425  BOMBARDIER INC.                      6  CANADIAN INDUSTRY - MANUFACTURERS
  167  BOSTON, HENRY, QUINN ASSOC.LTD       5  CANADIAN INDUSTRY - CONSULTANTS
  370  BRADLEY AIR SERVICES                 6  CANADIAN INDUSTRY - MANUFACTURERS
  268  BRITISH COLUMBIA RAILWAY             7  CANADIAN INDUSTRY - OPERATORS
  496  BRITISH COLUMBIA TRANSIT             7  CANADIAN INDUSTRY - OPERATORS
  224  BRITISH RAIL ENGINEERING LTD.        9  ALL FOREIGN PERFORMERS
  145  BROWN BOVERI CANADA INC.             6  CANADIAN INDUSTRY - MANUFACTURERS
  474  BTM INTERNATIONAL INC.               5  CANADIAN INDUSTRY - CONSULTANTS
  112  BUREAU OF MNGMENT CONSULTING         2  OTHER FEDERAL GOVERNMENT
  226  C-TECH LTD                           6  CANADIAN INDUSTRY - MANUFACTURERS
  229  C.E. BERTHIAUME TECHNOLOGIES         5  CANADIAN INDUSTRY - CONSULTANTS
  233  CAE ELECTRONICS LIMITED              6  CANADIAN INDUSTRY - MANUFACTURERS
  147  CANADAIR LIMITED                     6  CANADIAN INDUSTRY - MANUFACTURERS
  446  CANADIAN ASTRONAUTICS LIMITED        6  CANADIAN INDUSTRY - MANUFACTURERS
  114  CANADIAN COAST GUARD                 2  OTHER FEDERAL GOVERNMENT
  342  CANADIAN CLIMATE CENTRE - DOE        2  OTHER FEDERAL GOVERNMENT
  461  CANADIAN ELECTRICAL ASSOC.-CEA       4  OTHER NON - PROFIT INSTITUTES
  483  CANADIAN MARINE DRILLING LTD         7  CANADIAN INDUSTRY - OPERATORS
```

3.7.4

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REF.#  NOM CIE                         OGN.T  TITRE
=====  ==============================  =====  ==========================================
  432  W.F. BAIRD & ASSOCIATES             5  CANADIAN INDUSTRY - CONSULTANTS
  152  W.H. CANDLISH                       5  CANADIAN INDUSTRY - CONSULTANTS
  397  W.R. DAVIS ENGINEERING LIMITED      5  CANADIAN INDUSTRY - CONSULTANTS
  454  WARNOCK HERSEY                      5  CANADIAN INDUSTRY - CONSULTANTS
  216  WARTSILA ARCTIC INC.                5  CANADIAN INDUSTRY - CONSULTANTS
  497  WATERLOO RESEARCH INSTITUTE         3  UNIVERSITIES AND UNIVERSITY INSTITUTES
  410  WED TRANSPORTATION SYSTEMS INC      7  CANADIAN INDUSTRY - OPERATORS
  519  WELDING INSTITUTE OF CANADA         6  CANADIAN INDUSTRY - MANUFACTURERS
  503  WEST PARK RESEARCH                  4  OTHER NON - PROFIT INSTITUTES
  243  WHITEGAITES ENGINEERING LTD         5  CANADIAN INDUSTRY - CONSULTANTS
  148  WINNIPEG COACH SALES                6  CANADIAN INDUSTRY - MANUFACTURERS
```

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87/11/05 [14:44:29]
NO. S  SPONS. ORG. NAME
=====  ==============================
  169  ACDB
  152  ADMPC
  102  AGRICULTURE CANADA
  122  AIRG
  101  APP-I-PF
  112  ASSOC. DU CAMIONNAGE DU QUEBEC
  116  ASTA
  105  CANADIAN COAST GUARD
  133  CANADIAN ELECTRICAL ASSOC.-CEA
  113  CANADIAN PACIFIC LIMITED
  118  CANROAD TRANSPORTATION
  137  CATA
  129  CMTA
  143  CN MARINE
  114  CN RAIL
  163  CONTRIBUTIONS
  130  CSTA
  121  DEPARTMENT OF HIGHWAYS AND
  106  DEPT. OF NATIONAL DEFENCE
  149  DFS/T
  150  DGRD/X
  141  DGRF
  132  DGSM
  115  DGIS
  140  DIRECTORATE OF ROAD SAFETY
  107  DND CANADA - D.C.I.E.M.
  120  DNR
  117  DRIE/SPECIAL ARDA COMMITTEE
  123  DRPI
  155  DSS
  108  ENERGY MINES AND RESOURCES
  109  ENVIRONMENT CANADA
  161  ERDA-MANITOBA
  160  ERDA-QUEBEC
  148  EXTERNAL AFFAIRS
  144  FISHERIES AND OCEANS
  145  GOVERNMENT OF NEWFOUNDLAND
  164  GRANTS
  153  HYDROGEN INDUSTRY COUNCIL
  165  IN-HOUSE TPD
  167  IN-HOUSE-TDT ADVANCED TECHLGY
  166  IN-HOUSE-TDT CURRENT TECH.
  162  IN-HOUSE-TDT TECH.APPLICATIONS
  139  INDIAN AND NORTHERN AFFAIRS
  135  INDUSTRY TRADE & COMMERCE
  134  INSTITUTE OF OCEAN SCIENCES
  127  LAKEHEAD HARBOUR COMMISSION
  147  MANITOBA HIGHWAYS AND
  136  MINISTRY OF STATE
  119  MLSF
  110  NATIONAL RESEARCH COUNCIL
  159  NEP-COAL
```

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87/11/05 [14:44:29]
NO. S  SPONS. ORG. NAME
=====  ==============================
  157  NEP-CONS
  158  NEP-LIQS
  156  NEP-TRNS
  124  NORTHWEST TERRITORIES
  125  ONTARIO MOT COMMUNICATIONS
  146  PDC/T
  168  PORTS CANADA
  154  ROYAL CANADIAN MOUNTED POLICE
  126  T.C. TRANSP. OF DANGEROUS GOOD
  142  TCTI - TRANSPORT CANADA
  128  TORONTO INTERNATIONAL AIRPORT
  104  TPDD-E&H
  131  TRANSPO 86 CORPORATION
  103  TRANSPORT DEV. CENTRE
  170  UNIVERSITY OF OTTAWA
  151  VANCOUVER INT'L AIRPORT
  111  VIA RAIL CANADA INC.
  138  WESTERN REGION ADM.-CATA-WRA
```

```
Liste pour : MOD SUBJ          : AIR
             CSPONSOR          : TDC-O&M
------------------------------------------

PROJE  PRJT TTL                          TOT$AUTH     PREV YRS     TOT$INCR     ACT $ CY     EST $ CY     BGT $ CY     STATUS      OFF PRJT
=====  ================================  ===========  ===========  ===========  ===========  ===========  ===========  ==========  ==========
 6210  STOL ENERGY EFFICIENCY            185,218.00   131,642.69   180,000.00     6,908.45    53,575.31    53,575.31  ACTIVE      MYERS
 6067  AEROSPACE ROBOTICS                 48,566.00    44,455.84    44,455.84         0.00         0.00     4,110.16  ACTIVE      MYERS
 6069  AIRCRAFT SIMULATOR RESPONSE       289,906.00   289,905.17   289,905.18         0.00         0.00         0.00  ACTIVE      MYERS
 6144  NACELLE AIRFLOW OPT. (PITOT)      110,200.00   110,199.99   110,199.99         0.00         0.00         0.00  ACTIVE      MYERS
 6146  GAS TURBINE CERAMICS PHASE 2       38,258.00    38,258.00    38,258.00         0.00         0.00         0.00  ACTIVE      MYERS
 6166  NACELLE AIRFLOW OPT.(SCOOP)       180,000.00   180,000.00   180,000.00         0.00         0.00         0.00  ACTIVE      MYERS
 6320  DEV. OF MICROSTRIP MLS ANTENNA    168,877.00   168,877.00   168,877.00         0.00         0.00         0.00  CMPLETED    AVNI
 6347  VADIS AIRBORNE TECHNOLOGY          57,483.00    57,483.00    57,483.00         0.00         0.00         0.00  ACTIVE      AVNI
 6354  AIRSHIP FLIGHT DYNAMICS ANAL.      18,400.00    18,400.00    18,400.00         0.00         0.00         0.00  ACTIVE      MYERS
 6379  AUTOM X-RAY SCREENING SYSTEM       96,151.08    96,151.08    96,151.08         0.00         0.00         0.00  ACTIVE      MYERS
 6470  CAL FOR ATC ELECTRONICS           164,983.00   125,615.42   164,983.00     1,531.04    39,367.58    39,367.58  ACTIVE      MYERS
 6931  CANADIAN RADIO NAVIGATION         164,000.00         0.00         0.00         0.00    64,000.00    64,000.00  NEGOTIAT    AVNI
 6733  DEV.PROTOTYPE AIRCRAFT COUNTER     37,720.00         0.00         0.00         0.00    37,720.00    37,720.00  ACTIVE      AVNI
 6549  MLS GROUND TEST FACILITY          245,742.00   243,841.00   243,841.00         0.00     1,901.00     1,901.00  ACTIVE      AVNI
 6583  ATC WORK STATION PROTOTYPE        200,000.00         0.00         0.00         0.00   200,000.00   200,000.00  ACTIVE      NISHIZAKI
 6591  AERONAUTICAL TECHNOLOGY INVEST     80,000.00         0.00     9,452.50     9,452.50    40,000.00    80,000.00  PRE-AMEN    MYERS
 6609  IMS DETECTION OF EXPLOSIVES        76,485.00         0.00    10,126.80    10,126.80    76,485.00    76,485.00  AMENDMNT    AUDETTE
 6621  EXPLOSIVES DET.TECH.ASSESSMENT     50,552.00    50,552.00    50,552.00         0.00         0.00         0.00  ACTIVE      AUDETTE
 6713  COMM COMP & ELEC. TECH. (TIES)    170,000.00         0.00     3,850.00         0.00    45,000.00    45,000.00  ACTIVE      POSLUNS
 6706  AIS COMPUTER GRAPHICS DEMO         94,755.00     3,057.94     3,948.02         0.00    60,000.00    60,000.00  AMENDMNT    MYERS
 6729  MLS FRANGIBILITY STUDY             55,650.00    30,200.00    30,200.00         0.00    25,450.00    25,450.00  ACTIVE      VERSAILLES
 6784  SMALL AIRCRAFT CRASHWORTHINESS     56,160.00    38,113.79    56,156.28    15,616.68    18,046.21    18,046.21  ACTIVE      MCLAREN
 6791  WIND-SHEAR DETECTION STUDY         50,000.00         0.00         0.00         0.00    50,000.00    50,000.00  NEGOTIAT    POSLUNS
 6794  CONVERTIBLE DME-DME/P STUDY        58,200.00         0.00    15,000.00         0.00    58,200.00    58,200.00  ACTIVE      VERSAILLES
 6812  AIRWORTHINESS DIRECTIVES CRIT.     13,987.00         0.00    11,354.88     9,942.48    13,987.00    13,987.00  ACTIVE      AVNI
 6856  PEMBERTON MLS/STOL DEMONS.        153,904.00    54,908.00    91,000.00         0.00   108,996.00    98,996.00  PRE-AMEN    MYERS
 6859  ELT FEASIBILITY STUDY              39,944.00         0.00         0.00         0.00    39,944.00    39,944.00  ACTIVE      POSLUNS
 6867  KB SYSTEM FOR EM INTERFERENCE      25,800.00         0.00         0.00         0.00    25,800.00    25,800.00  ACTIVE      AVNI
 6874  COMM COMP & ELEC. TECH. (TIES)    130,000.00         0.00         0.00         0.00    10,000.00    10,000.00  NEGOTIAT    POSLUNS
 6875  PROTOTYPE TWB VANCOUVER            95,362.00    55,000.00    92,000.00    31,148.00    40,362.00    40,362.00  ACTIVE      MORGAN
 6906  DEMO-FSS WEATHER INFO SYSTEM       60,000.00         0.00    40,000.00    20,000.00    60,000.00    60,000.00  ACTIVE      VERSAILLES
 6918  AUTOMATED X-RAY SCREENING         650,000.00         0.00         0.00         0.00    50,000.00    50,000.00  NEGOTIAT    AUDETTE
 6952  PEMBERTON MLS/STOL DEMONS.SUB1      9,790.00         0.00     3,416.00         0.00     9,790.00     9,790.00  ACTIVE      MYERS
 6953  SMOKE MASK                              0.00         0.00         0.00         0.00         0.00         0.00  NEGOTIAT    RICHARD
 6956  DIGITAL VOICE AND DATA LOGGER      75,000.00         0.00         0.00         0.00    60,000.00         0.00  APP-I-PP    POSLUNS
                                         ===========  ===========  ===========  ===========  ===========  ===========
                                         3951,093.08  1736,660.92  2009,610.57  104,725.95   1188,624.10  1162,734.26
Total ( 35 Rec.) Pour CSPONSOR           = TDC-O&M
```

3.7.5

```
Liste pour : MOD SUBJ          : AIR
             CSPONSOR          : DSS
------------------------------------------
```

```
Liste Pour : MOD SUBJ          : UNDEF.
             CSPONSOR          : TDC-O&M
--------------------------------------------
PROJE PRJT TTL                      TOT$AUTH    PREV YRS    TOT$INCR    ACT $ CY    EST $ CY    BGT $ CY    STATUS      OFF PRJT
===== ============================ =========== =========== =========== =========== =========== =========== =========== ===========
 6889 RAILWAY SAFETY STANDARDS STUDY  33,000.00        0.00        0.00        0.00    1,000.00        0.00 APP-I-PP    VESPA
                                   =========== =========== =========== =========== =========== ===========
                                     33,000.00        0.00        0.00        0.00    1,000.00        0.00
Total ( 2 Rec.) Pour CSPONSOR      = TDC-O&M

                                   =========== =========== =========== =========== =========== ===========
                                     33,000.00        0.00        0.00        0.00    1,000.00        0.00
Total ( 2 Rec.) Pour MOD SUBJ      = UNDEF.

                                   =========== =========== =========== =========== =========== ===========
                                   42614190.62 25282370.57 27503743.35  796,583.77 11348860.16 9805,061.50
*** GRAND Total( 427 Rec.) ***
```

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87/10/07 [09:41:12]                                                                                                    Page 1

Liste Pour : RSFB CNT              : 257100
             CSPONSOR              : TDC-O&M
-------------------------------------------
PROJE  PRJT TTL                        TOT$AUTH     PREV YRS     TOT$INCR     ACT $ CY     EST $ CY     BGT $ CY     STATUS      OFF PRJT
=====  ==============================  ===========  ===========  ===========  ===========  ===========  ===========  ==========  ==========
 6657  COMPUTER SYSTEM SUPPORT 86/87    300,000.00   246,816.49   299,904.99    53,088.50    53,088.50    53,088.50  CMPLETED    SUEN
 6672  TDC COMP SYSTEM EVALUATION        59,675.00         0.00     3,000.00         0.00    59,675.00    59,675.00  ACTIVE      POSLUNS
 6925  DSS FEES O&M 1987-88             125,000.00         0.00    25,000.00         0.00   125,000.00   125,000.00  ACTIVE      SIDHOM
 6888  COMPUTER SYSTEMS SUPPORT 87/88   200,000.00         0.00    31,899.30    15,765.31   200,000.00   200,000.00  ACTIVE      SUEN
                                       ===========  ===========  ===========  ===========  ===========  ===========
                                        684,675.00   246,816.49   359,804.29    68,853.81   437,763.50   437,763.50
Total ( 4 Rec.) Pour CSPONSOR         = TDC-O&M

                                       ===========  ===========  ===========  ===========  ===========  ===========
                                        684,675.00   246,816.49   359,804.29    68,853.81   437,763.50   437,763.50
Total ( 4 Rec.) Pour RSFB CNT         = 257100
```

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87/10/07 [10.15:13]

Liste Pour : RSPB CNT          : 257150                                                                                   Page 38
             CSPONSOR          : TDC-EXT
------------ ------------------- ----------
PROJE  PRJT TTL                                 TOT$AUTH     PREV YRS     TOT$INCR     ALI $ CY     EST $ CY     BGT $ CY   STATUS      OFF PRJT
=====  ===============================        ===========  ===========  ===========  ===========  ===========  ===========  ==========  ===========
6557   ARCTIC SHIP TECHNOLOGY                  113,030.00   112,999.49   112,999.49         0.00         0.00         0.00  CMPLETED    LAFRAMBOISE
6772   ICE PROP. SHAFT DYNAMIC                  50,000.00    50,000.00    50,000.00         0.00         0.00         0.00  CMPLETED    SEMERY
6459   ICE/PROP.ENGINEERING ANALYSIS            60,000.00    60,000.00    60,000.00         0.00         0.00         0.00  ACTIVE      BAYLY
6481   US POLAR CLASS PROGRAM 85/86            144,000.00   144,000.00   144,000.00         0.00         0.00         0.00  ACTIVE      BAYLY
6537   HF/ARCTIC SHIP SAFETY MEASUR'T           15,000.00    15,000.00    15,000.00         0.00         0.00         0.00  ACTIVE      BAYLY
6639   ADDED MASS AND DAMPING                  115,000.00   115,000.00   115,000.00         0.00         0.00         0.00  ACTIVE      BAYLY
6453   SWATH FEASIBILITY STUDY                  50,000.00    50,000.00    50,000.00         0.00         0.00         0.00  ACTIVE      LAFRAMBOISE
6758   STRIES BRISE-GLACE                       30,000.00    30,000.00    30,000.00         0.00         0.00         0.00  ACTIVE      LAFRAMBOISE
6802   "R" CLASS - SCALE EFFECTS                25,000.00    25,000.00    25,000.00         0.00         0.00         0.00  ACTIVE      LAFRAMBOISE
6065   DEGLACAGE-PORT DE CHICOUTIMI             12,000.00    12,000.00    12,000.00         0.00         0.00         0.00  ACTIVE      LAFRAMBOISE
6770   SHIP ICING PHENOMENON                    25,000.00    25,000.00    25,000.00         0.00         0.00         0.00  ACTIVE      SEMERY
6974   ICEBREAKER MID-BODY RESISTANCE           35,000.00         0.00         0.00         0.00    35,000.00    35,000.00  NEGOTIAT    PEIRCE
6954   SMOKE MASK                                    0.00         0.00         0.00         0.00         0.00         0.00  NEGOTIAT    RICHARD
6951   ICE BLOCKAGE OF SHROUDED PROPS           20,000.00         0.00         0.00         0.00         0.00         0.00  NEGOTIAT    SEMERY
6908   ARCTIC SURVIVAL SLED                     15,000.00         0.00         0.00         0.00    15,000.00         0.00  APP-I-PP    RICHARD
6909   INFORMATION SYSTEMS ANALYSIS             40,000.00         0.00         0.00         0.00    40,000.00         0.00  APP-I-PP    RICHARD
                                              ===========  ===========  ===========  ===========  ===========  ===========
Total ( 16 Rec.) Pour CSPONSOR                 769,000.00   638,999.49   638,999.49         0.00    90,000.00    35,000.00
                                              = TDC-EXT

                                              ===========  ===========  ===========  ===========  ===========  ===========
Total ( 16 Rec.) Pour RSPB CNT                 769,000.00   638,999.49   638,999.49         0.00    90,000.00    35,000.00
                                              = 257150

                                              ===========  ===========  ===========  ===========  ===========  ===========
*** GRAND Total( 59 Rec.) ***                 4001,016.67  2002,456.90  2409,129.44   232,772.70  1312,277.50  1209,952.94
```

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87/10/07 [10:17:47]                                                                                                          Page 1

Liste pour : RSPB CNT          : 257110
------------------------------ ---------
PROJE  PRJT TTL                          TOTAUTH     PREV YFS    TOTAUMCR    ACT 8 FY    EST 8 CY    ELT 8 CY    STATUS     OFF PRJT    ESPONS
=====  ================================  ==========  ==========  ==========  ==========  ==========  ==========  ==========  ==========  =========
 6938  ARCTIC STRUCTURES CORROSION       -20,000.00        0.00        0.00        0.00  -20,000.00        0.00  APP-I-PP   GOKE        OTHER DEPT
 6937  ARCTIC STRUCTURES CORROSION       -25,000.00        0.00        0.00        0.00  -25,000.00        0.00  APP-I-PP   GO-F        TCN
 6586  ATC WORK STATION PROTOTYPE        -200000.00   50,000.00  -12,000.18        0.00  -150000.00  -150000.00  ACTIVE     NISHIZAKI   TCAV
 6807  HIGHWAY SNOW DRIFT CONTROL        -25,000.00        0.00        0.00        0.00  -12,500.00  -12,500.00  ACTIVE     DIBBLE      TCS
 6809  HIGHWAY SNOW DRIFT CONTROL        -10,000.00        0.00        0.00        0.00   -5,000.00   -5,000.00  ACTIVE     DIBBLE      OTHER DEPT
 6810  HIGHWAY SNOW DRIFT CONTROL        -10,000.00        0.00        0.00        0.00   -5,000.00   -5,000.00  ACTIVE     DIBBLE      OTHER DEPT
 6811  HIGHWAY SNOW DRIFT CONTROL        -18,500.00        0.00        0.00        0.00  -10,000.00  -10,000.00  ACTIVE     DIBBLE      PROV/MUN
 6837  DANGEROUS GOODS ACCIDENT MODEL    -79,100.00        0.00  -23,042.18        0.00  -79,100.00  -79,100.00  ACTIVE     DIBBLE      TCS
 6891  HIGHWAY SNOW DRIFT CONTROL        -20,000.00        0.00        0.00        0.00  -10,000.00  -10,000.00  ACTIVE     DIBBLE      PROV/MUN
 6983  STUDY OF CMA FOR AIRPORT USE      -50,000.00        0.00        0.00        0.00  -50,000.00        0.00  APP-I-PP   DIBBLE      TCAP
                                         ==========  ==========  ==========  ==========  ==========  ==========
                                         -457600.00  -50,000.00  -146442.36        0.00  -366600.00  -271600.00
Total ( 10 Rec.) Pour RSPB CNT           = 257110
```

3.7.6

```
Liste pour : RSPB CNT          : 257150
------ -------:------------------- -

PROJE  PRJT TTL                         TOT$AUTH     PREV YR.     TOT$INCA     ACT $ CY     EST $ CY     PGI $ CY     STATUS      OFF PRJT     CSPONSOR
=====  ==============================   ==========   ==========   ==========   ==========   ==========   ==========   ==========  ===========  =========
 6893  WIND & WAVE CLIMATE ATLAS        -100000.00         0.00         0.00         0.00         0.00         0.00   TERMINAT    PEIRCE       TCM
 6866  DEGLACAGE-PORT DE CHICOUTIMI     -12,000.00         0.00   -12,000.00   -12,000.00   -12,000.00   -12,000.00   ACTIVE      LAFRAMBOISE  OTHER TC
 6950  ICE BLOCKAGE OF SHROUDED PROPS   -20,000.00         0.00         0.00         0.00         0.00         0.00   APP-I-PP    SEMERY       TCM
 6955  SMOKE MASK                       -15,000.00         0.00         0.00         0.00   -15,000.00   -15,000.00   ACTIVE      RICHARD      TCM
 6973  ICEBREAKER MID-BODY RESISTANCE   -35,000.00         0.00         0.00         0.00   -35,000.00   -35,000.00   ACTIVE      PEIRCE       OTHER DEPT
 6987  ARCTIC SURVIVAL SLED             -15,000.00         0.00         0.00         0.00   -15,000.00         0.00   APP-I-PP    RICHARD      TCM
 6990  INFORMATION SYSTEMS ANALYSIS     -60,000.00         0.00         0.00         0.00   -40,000.00         0.00   APP-I-PP    RICHARD      OTHER TC
                                        ==========   ==========   ==========   ==========   ==========   ==========
                                        -257000.00         0.00   -12,000.00   -12,000.00   -117000.00   -62,000.00
Total ( 7 Rec.) Pour RSPB CNT         = 257150

                                        ==========   ==========   ==========   ==========   ==========   ==========
                                       -2190826.00   -400324.00   -605579.27   -12,000.00  -1333642.00  -1144642.00
 *** GRAND Total( 36 Rec.) ***
```

```
07/10/87 [10:20:13]                                                                                                     Page [illegible]
                                        GRANTS AND CONTRIBUTIONS
                                        ========================

Liste pour : RSPB CNT        : 257120
--------------------------------------

PROJE  PRJT TTL                        TOTAUTH      PREV YRS     TOTBUDGT     ACT 8 [illegible]  EST 8 [illegible]  [illegible]  [illegible]  [illegible]  [illegible]
=====  ==============================  ===========  ===========  ===========  ===========  ===========  ===========
 6647  ETUDE CHEMINS DE FER COTE-NORD   222,470.00   173,416.44   200,000.00    20,513.51    49,061.56    49,061.56  AMENDMNT  VERSAILLES  [illegible]
 6775  BOGIE MECANO-SOUDE              1035,000.00    37,327.13   150,000.00    29,999.23   277,662.87   277,662.87  ACTIVE    VERSAILLES  [illegible]
 6854  CAISSE DE METRO GRAND GABARIT    889,000.00    11,619.15    32,348.46    20,729.31   452,380.00   452,380.00  ACTIVE    VERSAILLES  ERDA/OUE
                                       ===========  ===========  ===========  ===========  ===========  ===========
                                       2146,470.00   222,372.72   382,348.46    71,252.05   779,104.43   779,104.43
Total ( 3 Rec.) Pour RSPB CNT          = 257120
```

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87/10/   10:26:12

                                   GRANTS AND CONTRIBUTIONS
                                   ========================

Liste pour : RSPB CNT          : 257130
-------------- ----- ------------------

PROJE  PRJT TTL                          TOT$AUTH     PREV YRS     TOT$INCR     ACT $ CY     EST $ CY     BGT $ CY     STATUS      OFF PRJT      CSPONSOR
=====  ================================  ===========  ===========  ===========  ===========  ===========  ===========  ==========  ============  ==========
 6661  GESTION CIRCULATION-METROP/DEC     180,500.00    71,723.38    97,992.94    19,831.35   108,776.92   108,776.92  AMENDMNT    WHITEHEAD     EAPA/DUE
 6728  DEMO AUTOCAR ARTIC - PHASE I        50,863.82    40,143.77    41,219.05     1,075.28     1,075.28    10,720.05  PRE AMEN    MARSHALL      LADA/DUE
 6942  DEMO AUTOCAR ARTIC - PHASE II     2449,000.00         0.00         0.00         0.00   736,000.00         0.00  APP-1-PP    MARSHALL      EPDA/DUE
                                          ===========  ===========  ===========  ===========  ===========  ===========
                                         2680,363.82   111,866.85   139,211.99    20,906.63   845,852.20   119,496.97
Total ( 3 Rec.) Pour RSPB CNT          = 257130

                                          ===========  ===========  ===========  ===========  ===========  ===========
                                         4826,841.02   334,239.57   521,560.45    92,158.68  1624,956.63   898,601.40
 *** GRAND Total( 6 Rec.) ***
```

TDC NEW BUDGET SUMMARY BY MODE AS OF 87/10/31

3.7.7

```
87/11/06 [11:35:03]

Liste pour : RSFB CNT          : 257100
             MOD SUBJ          : PROG.SUP
-----------------------------------------------------------
PROJE PRJT TTL                          TOT$AUTH     PREV YRS     TOT$INCR     ACT $ CY     EST $ CY     BGT $ CY    STATUS      OFF PR
===== ============================== ============ ============ ============ ============ ============ ============ =========== ======
6657  COMPUTER SYSTEM SUPPORT 86/87    300,000.00   246,816.49   299,904.99    53,088.50    53,088.50    53,088.50 CMPLETED    SUEN
6672  TDC COMP SYSTEM EVALUATION        59,675.00         0.00     3,000.00         0.00    59,675.00    59,675.00 ACTIVE      POSLUN
6922  R&D ENERGY 1987-88              -2696000.00         0.00   -254509.00         0.00  -1627643.57  -1627643.57 ACTIVE      SIDHOM
6923  TDPP-E&H 1987-88                 -831152.82         0.00   -74,836.00         0.00   -831152.82   -831152.82 ACTIVE      SIDHOM
6924  DSS BRIDGE 1987-88              -2120789.58         0.00   -489935.85   -489935.85  -2120789.58  -2120789.58 ACTIVE      SIDHOM
6925  DSS FEES O&M 1987-88              80,000.00         0.00    20,000.00         0.00    80,000.00    80,000.00 ACTIVE      SIDHOM
6929  DSS FEES 1987-88                  10,000.00         0.00     2,000.00         0.00    10,000.00    10,000.00 ACTIVE      SIDHOM
6927  DSS FEES ENERGY TRANS 1987-88     50,000.00         0.00     1,000.00         0.00    50,000.00    50,000.00 ACTIVE      SIDHOM
6928  DSS FEES CONS 1987-88             30,000.00         0.00     7,000.00         0.00    30,000.00    30,000.00 ACTIVE      SIDHOM
6888  COMPUTER SYSTEMS SUPPORT 87/88   200,000.00         0.00    66,085.12    50,272.61   200,000.00   200,000.00 ACTIVE      SUEN
                                     ============ ============ ============ ============ ============ ============
                                      -4918267.40   246,816.49   -420290.74   -386554.74  -4096822.47  -4096822.47
Total ( 10 Rec.) Pour MOD SUBJ       = PROG.SUP

                                     ============ ============ ============ ============ ============ ============
                                      -4918267.40   246,816.49   -420290.74   -336554.74  -4096822.47  -4096822.47
Total ( 10 Rec.) Pour RSFB CNT       = 257100
```

```
7/11/06 [11:35:03]

iste pour : RSPB CNT          : 257140
            MOD SUBJ          : FROG.SUP
---------------------------------------------
ROJE  PRJT TTL                            TOT$AUTH     PREV YRS     TOT$INCR     ACT $ CY     EST $ CY     BGT $ CY     STATUS      OFF PRJT
===== ================================  ===========  ===========  ===========  ===========  ===========  ===========  ==========  ===========
 6651 ONGOING UTLAS USE TDC LIBRARY       9,000.00     7,228.28     7,228.28         0.00         0.00         0.00 CMPLETED    EKINS
 6650 INFO RETRIEVAL DIALOG               8,000.00     2,246.21     2,476.62       230.41       230.41       230.41 CMPLETED    EKINS
 6652 INFO RETRIEVAL SDC-ORBIT            1,000.00       304.72       304.72         0.00         0.00         0.00 CMPLETED    EKINS
 6760 SMALL SYST. CONVERSION-IBM PC      36,000.00    27,905.00    36,000.00     8,095.00     8,095.00     8,095.00 CMPLETED    EKINS
 6430 ONGOING UTLAS USE TDC LIBRARY       9,000.00     6,731.07     6,731.07         0.00         0.00         0.00 CMPLETED    EKINS
 6251 TEXT PROCESSING SERVICES           32,000.00    26,028.00    26,028.00         0.00         0.00         0.00 CMPLETED    FERLAND
 6458 TEXT PROCESSING SERVICES           32,000.00    27,600.00    27,600.00         0.00         0.00         0.00 CMPLETED    FERLAND
 6202 INFO RETRIEVAL DIALOG               5,600.00     5,535.35     5,535.35         0.00         0.00         0.00 CMPLETED    NOGRADY
 6431 INFO RETRIEVAL DIALOG               8,000.00     4,086.62     4,086.62         0.00         0.00         0.00 CMPLETED    NOGRADY
 6203 INFO RETRIEVAL SDC-ORBIT            1,000.00     1,000.00     1,000.00         0.00         0.00         0.00 CMPLETED    NOGRADY
 6469 SPEC SERVICES                      10,000.00     6,202.00     6,202.00         0.00         0.00         0.00 CMPLETED    SIDHOM
 6705 ALPHACOMP,LASER PRINTING,DISKS     14,000.00     6,107.62     7,320.50     1,212.88     1,212.88     1,212.88 CMPLETED    THERRIEN
 6704 TEXT PROCESSING SERVICES           44,000.00    28,800.00    38,900.00    10,100.00    10,100.00    10,100.00 CMPLETED    THERRIEN
 6909 INFO RETRIEVAL CANOLE 87-92        10,000.00         0.00       817.16       736.62     2,000.00     2,000.00 ACTIVE      EKINS
 6646 RESEARCH INFORMATION MGMT         114,915.00    56,660.63    90,000.00    29,537.11    58,254.37    58,254.37 ACTIVE      EKINS
 6880 UTLAS USE IN TDC LBY 87-88          9,000.00         0.00     4,500.00     3,993.32     9,000.00     9,000.00 ACTIVE      EKINS
 6881 INFO RETRIEVAL DIALOG 87-88         5,000.00         0.00     2,500.00     2,131.44     5,000.00     5,000.00 ACTIVE      EKINS
 6882 INFO RETRIEVAL SDC-ORBIT 87-88      1,000.00         0.00        40.00        29.42     1,000.00     1,000.00 ACTIVE      EKINS
 6723 SPEC SERVICES                       7,000.00         0.00         0.00         0.00     7,000.00     7,000.00 ACTIVE      SIDHOM
 6926 DSS FEES E&H 1987-88               40,000.00         0.00     4,000.00         0.00    40,000.00    40,000.00 ACTIVE      SIDHOM
 6539 TECHNICAL WRITING SUPPORT          80,000.00    76,214.27    79,914.27     3,700.00     3,785.73     3,785.73 ACTIVE      SMITH T
 6718 COMMUNICATIONS SUPPORT             15,000.00     7,400.00    11,500.00     2,000.00     7,500.00     7,600.00 ACTIVE      SMITH T
 6858 DESKTOP PUBLISHING SERVICES        31,900.00         0.00     8,221.50     5,481.00    31,900.00    31,900.00 ACTIVE      THERRIEN
 6902 TECHNICAL WRITING                 130,000.00         0.00         0.00         0.00    55,000.00    55,000.00 NEGOTIAT    SMITH T
                                        ===========  ===========  ===========  ===========  ===========  ===========
otal ( 24 Rec.) Pour MOD SUBJ            653,415.00   290,049.77   370,906.09    67,247.20   240,078.39   240,178.39
                                        = FROG.SUP

                                        ===========  ===========  ===========  ===========  ===========  ===========
otal ( 24 Rec.) Pour. RSPB CNT           653,415.00   290,049.77   370,906.09    67,247.20   240,078.39   240,178.39
                                        = 257140

                                        ===========  ===========  ===========  ===========  ===========  ===========
*** GRAND Total( 34 Rec.) ***           -4264852.40   536,866.26   -49,384.65   -319307.54  -3856744.08  -3856644.08
```

```
87/11/06 [11:38:21]                                                                                                                  Page 1

Liste pour : MOD SUBJ        : AIR
------------------------------------------

PROJE  PRJT TTL                         TOT$AUTH     PREV YRS     TOT$INCR     ACT $ CY     EST $ CY     BGT $ CY     STATUS      OFF PRJT     CSPONSOR
=====  ==============================  ===========  ===========  ===========  ===========  ===========  ===========  ==========  ===========  ==========
 6592  AERONAUTICAL TECHNOLOGY INVEST  -20,000.00        0.00         0.00         0.00         0.00         0.00  APP-I-PP    MYERS        TCAV
 6861  ELT FEASIBILITY STUDY           -40,000.00        0.00         0.00         0.00   -40,000.00   -40,000.00  NEGOTIAT    FOSLUNS      TCAV
 6869  KB SYSTEM FOR EM INTERFERENCE   -40,000.00        0.00   -34,155.13         0.00   -40,000.00   -40,000.00  ACTIVE      AVNI         TCAV
 6586  ATC WORK STATION PROTOTYPE      -200000.00   -50,000.00   -122800.18   -25,925.83   -150000.00   -150000.00  ACTIVE      NISHIZAKI    TCAV
 6798  AIS COMPUTER GRAPHICS DEMO      -189000.00   -159000.00   -189000.00   -22,688.40   -30,000.00   -30,000.00  ACTIVE      MYERS        TCAV
 6731  MLS FRANGIBILITY STUDY          -39,726.00   -26,824.00   -39,726.00         0.00   -12,902.00   -12,902.00  ACTIVE      VERSAILLES   TCAV
 6735  DEV.PROTOTYPE AIRCRAFT COUNTER  -100000.00        0.00         0.00         0.00   -44,000.00   -100000.00  PRE-AMEN    AVNI         TCAV
 6793  WIND SHEAR STUDY                -85,000.00        0.00         0.00         0.00   -85,000.00   -85,000.00  ACTIVE      FOSLUNS      TCAV
 6796  CONVERTIBLE DME-DME/P STUDY     -20,000.00        0.00         0.00         0.00   -20,000.00   -20,000.00  NEGOTIAT    VERSAILLES   TCAV
 6955  SMOKE MASK                      -15,000.00        0.00         0.00         0.00   -15,000.00   -15,000.00  ACTIVE      RICHARD      TCAV
 6957  DIGITAL VOICE AND DATA LOGGER   -75,000.00        0.00         0.00         0.00         0.00         0.00  NEGOTIAT    FOSLUNS      TCAV
 6983  STUDY OF CMA FOR AIRPORT USE    -50,000.00        0.00         0.00         0.00   -50,000.00         0.00  APP-I-PP    DIBBLE       TCAP
 7006  LANDING ON NARROW AIRSTRIPS     -45,000.00        0.00         0.00         0.00         0.00         0.00  APP-I-PP    MYERS        TCAV
 7007  LANDING ON NARROW AIRSTRIPS     -20,000.00        0.00         0.00         0.00         0.00         0.00  APP-I-PP    MYERS        OTHER DEPT
 7008  LANDING ON NARROW AIRSTRIPS     -10,000.00        0.00         0.00         0.00         0.00         0.00  APP-I-PP    MYERS        PROV/MUN
 7009  LANDING ON NARROW AIRSTRIPS     -40,000.00        0.00         0.00         0.00         0.00         0.00  APP-I-PP    MYERS        TCAP
 6996  ELT FIELD TRIALS                -189800.00        0.00         0.00         0.00         0.00         0.00  APP-I-PP    FOSLUNS      TCAV
 6999  ANALYSIS OF RUNWAY ROUGHNESS    -50,000.00        0.00         0.00         0.00   -25,000.00   -25,000.00  NEGOTIAT    DIBBLE       TCAP
                                       ===========  ===========  ===========  ===========  ===========  ===========
                                       -1228526.00  -235824.00   -385681.31   -48,614.23   -511902.00   -517702.00
Total ( 18 Rec.) Pour MOD SUBJ         = AIR
```

```
87/11/06 [11:38:21]                                                                                                                  Page 6

Liste pour : MOD SUBJ        : HANDICAP
----------------------------------------------
PROJE PRJT TTL                        TOT$AUTH    PREV YRS    TOT$INCR    ACT $ CY    EST $ CY    BST $ CY    STATUS     OFF PRJT    CSPONSOR
===== ============================== =========== =========== =========== =========== =========== =========== ========== =========== =========
 6913 PORTABLE COMMUNIC/TRANSLATOR     -30,000.00        0.00        0.00        0.00  -10,000.00        0.00 APP-I-PP   MORGAN      TCAF
 6764 ERGO ASSESSMENT MODIFIED VANS    -50,500.00  -25,000.00  -47,640.00        0.00  -22,640.00  -22,640.00 ACTIVE     SMITH B     OTHER TC
 6990 INFORMATION SYSTEMS ANALYSIS     -60,000.00        0.00        0.00        0.00  -40,000.00        0.00 APP-I-PP   RICHARD     OTHER TC
                                      =========== =========== =========== =========== =========== ===========
                                        -140500.00  -25,000.00  -47,640.00        0.00  -72,640.00  -22,640.00
Total ( 3 Rec.) Pour MOD SUBJ        = HANDICAP

                                      =========== =========== =========== =========== =========== ===========
                                       -2560626.00   -400324.00  -657517.49  -84,638.23 -1328642.00 -1194642.00
  *** GRAND Total( 43 Rec.) ***
```

```
87/11/06 [11:41:43]                                                                                                          Page 1
                                             GRANTS AND CONTRIBUTIONS BY MODE
                                             ================================

Liste pour : MOD SUBJ          : HIGHWAY
------------------------------------------
PROJE  PRJT TTL                          TOT$AUTH     PREV YRS     TOT$INCR     ACT $ CY     EST $ CY     BGT $ CY    STATUS     OFF PRJT    CSPONSOR
=====  ================================  ===========  ===========  ===========  ===========  ===========  ===========  ==========  ===========  ==========
 6728  DEMO AUTOCAR ARTIC - PHASE I        50,863.82    40,143.77    41,219.05     1,075.28     1,075.28    10,720.05  PRE-AMEN    MARSHALL     ERDA/QUE
 6942  DEMO AUTOCAR ARTIC - PHASE II     2449,000.00         0.00         0.00         0.00   736,000.00   736,000.00  NEGOTIAT    MARSHALL     ERDA/QUE
                                         ===========  ===========  ===========  ===========  ===========  ===========
                                         2499,863.82    40,143.77    41,219.05     1,075.28   737,075.28   746,720.05
Total ( 2 Rec.) Pour MOD SUBJ           = HIGHWAY
```

```
87/11/06 [11:41:43]
                                   GRANTS AND CONTRIBUTIONS BY MODE
                                   ================================

Liste pour : MOD SUBJ         : URBAN
---------------------------------------------
                                        TOT$AUTH      PREV YRS     TOT$INCR      ACT $ CY      EST $ CY      FGT $ CY     STATUS      OFF PRJT     CSPONSOR
PROJE  PRJT TTL                        ===========  ===========  ===========  ===========  ===========  ===========  ==========  ==========  =========
=====  ==============================                                                                                AMENDMNT    WHITEHEAD    ERDA/QUE
 6661  GESTION CIRCULATION-METROF/DEC   130,500.00    71,723.08    99,795.82    26,269.86   108,776.92   108,776.92  ACTIVE      VERSAILLES   ERDA/QUE
 6854  CAISSE DE METRO GRAND GABARIT    889,000.00    11,619.15    55,000.00    20,729.31   452,380.00   452,380.00
                                       ===========  ===========  ===========  ===========  ===========  ===========
                                       1069,500.00    83,342.23   154,795.82    46,999.17   561,156.72   561,156.92
Total ( 2 Rec.) Pour MOD SUBJ           = URBAN

                                       ===========  ===========  ===========  ===========  ===========  ===========
                                       4826,941.92   334,239.57   555,115.53   107,651.29  1624,956.63  1634,601.40

 *** GRAND Total( 6 Rec.) ***
```

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87/10/05 [16:13:16]                                                                                                      Page 1
                                         TDC PROJECT LISTING BY SPONSORING AGENCY
                                     AUTHORIZED BY RESPONSIBILITY CENTRE AS OF SEPT 30/87

Liste pour : RSPB CNT          : 257100
             CSPONSOR          : TDC-01M
-------------------------------------------
PROJE  NOM CIE                          SPONS. ORG. NAME                   TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     BAL $ CY     BGT$FUT
=====  ===============================  ===============================  ===========  ===========  ===========  ===========  ===========  ===========
 6672  DIGI-PLUS INC.                   TRANSPORT DEV. CENTRE              59,675.00         0.00    59,675.00         0.00    59,675.00         0.00
 6657  LES SYSTEMES SUR MESURE PB INC   TRANSPORT DEV. CENTRE             300,000.00   246,816.49    53,088.50    53,088.50         0.00         0.00
 6888  LES SYSTEMES SUR MESURE PB INC   TRANSPORT DEV. CENTRE             200,000.00         0.00   200,000.00    15,765.31   168,100.70         0.00
 6925  SANS CONTRACTANT                 TRANSPORT DEV. CENTRE             125,000.00         0.00   125,000.00         0.00   125,000.00         0.00
                                                                         ===========  ===========  ===========  ===========  ===========  ===========
                                                                          684,675.00   246,816.49   437,763.50    68,853.81   352,775.70         0.00
Total ( 4 Rec.) Pour CSPONSOR         = TDC-01M

Liste pour : RSPB CNT          : 257100
             CSPONSOR          : DSS
-------------------------------------------
PROJE  NOM CIE                          SPONS. ORG. NAME                   TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     BAL $ CY     BGT$FUT
=====  ===============================  ===============================  ===========  ===========  ===========  ===========  ===========  ===========
 6924                                   DSS                              -1740789.58         0.00  -1740789.58   -220186.00  -1520603.58         0.00
                                                                         ===========  ===========  ===========  ===========  ===========  ===========
                                                                         -1740789.58         0.00  -1740789.58   -220186.00  -1520603.58         0.00
Total ( 1 Rec.) Pour CSPONSOR         = DSS

Liste pour : RSPB CNT          : 257100
             CSPONSOR          : CONS
-------------------------------------------
PROJE  NOM CIE                          SPONS. ORG. NAME                   TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     BAL $ CY     BGT$FUT
=====  ===============================  ===============================  ===========  ===========  ===========  ===========  ===========  ===========
 6928  SANS CONTRACTANT                 ACDB                               30,000.00         0.00    30,000.00         0.00    30,000.00         0.00
                                                                         ===========  ===========  ===========  ===========  ===========  ===========
                                                                           30,000.00         0.00    30,000.00         0.00    30,000.00         0.00
Total ( 1 Rec.) Pour CSPONSOR         = CONS

Liste pour : RSPB CNT          : 257100
             CSPONSOR          : TRNS
-------------------------------------------
PROJE  NOM CIE                          SPONS. ORG. NAME                   TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     BAL $ CY     BGT$FUT
=====  ===============================  ===============================  ===========  ===========  ===========  ===========  ===========  ===========
 6922  C-TECH LTD                       ACDB                             -2696000.00         0.00  -1809729.57         0.00  -1702757.57   -886270.43
 6927  SANS CONTRACTANT                 ACDB                               50,000.00         0.00    50,000.00         0.00    50,000.00         0.00
                                                                         ===========  ===========  ===========  ===========  ===========  ===========
                                                                         -2646000.00         0.00  -1759729.57         0.00  -1652757.57   -886270.43
```

3.7.8

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87/10/05 [16:13:16]                                                                                                     Page 23
                                                 TDC PROJECT LISTING BY SPONSORING AGENCY
                                            AUTHORIZED BY RESPONSIBILITY CENTRE AS OF SEPT 30/87

Liste pour : RSPB CNT          : 257150
             CSPONSOR          : TDC-EXT
-------------------------------------------
PROJE  NOM CIE                          SPONS. ORG. NAME                    TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     BAL $ CY     BGT$FUT
=====  ===============================  ===============================  ===========  ===========  ===========  ===========  ===========  ===========
 6639  ARCTEC CANADA LIMITED            CANADIAN COAST GUARD              115,000.00   115,000.00         0.00         0.00         0.00         0.00
 6772  ARCTEC CANADA LIMITED            CANADIAN COAST GUARD               50,000.00    50,000.00         0.00         0.00         0.00         0.00
 6481  ARCTEC CANADA LIMITED            CANADIAN COAST GUARD              144,000.00   144,000.00         0.00         0.00         0.00         0.00
 6802  ARCTEC NEWFOUNDLAND LIMITED      CANADIAN COAST GUARD               25,000.00    25,000.00         0.00         0.00         0.00         0.00
 6951  ARCTIC RESEARCH & DEVELOPMENT    APP-I-PP                           20,000.00         0.00         0.00         0.00         0.00    20,000.00
 6459  CANADIAN MARINE DRILLING LTD     CANADIAN COAST GUARD               60,000.00    60,000.00         0.00         0.00         0.00         0.00
 6758  DONALD CARTER, D. SC.,           CANADIAN COAST GUARD               30,000.00    30,000.00         0.00         0.00         0.00         0.00
 6453  EYRETECHNICS LIMITED             DND CANADA - D.C.I.E.M.            50,000.00    50,000.00         0.00         0.00         0.00         0.00
 6865  ICE CONTROL ENTREPRISES INC.     PORTS CANADA                       12,000.00    12,000.00         0.00         0.00         0.00         0.00
 6557  MELVILLE SHIPPING LTD            CANADIAN COAST GUARD              113,000.00   112,999.49         0.00         0.00         0.00         0.00
 6770  MELVILLE SHIPPING LTD            CANADIAN COAST GUARD               25,000.00    25,000.00         0.00         0.00         0.00         0.00
 6974  MELVILLE SHIPPING LTD            NATIONAL RESEARCH COUNCIL          35,000.00         0.00    35,000.00         0.00    35,000.00         0.00
 6988  MELVILLE SHIPPING LTD            APP-I-PP                           15,000.00         0.00         0.00         0.00         0.00         0.00
 6537  POLAR SEA RESEARCH LIMITED       CANADIAN COAST GUARD               15,000.00    15,000.00         0.00         0.00         0.00         0.00
                                                                         ===========  ===========  ===========  ===========  ===========  ===========
                                                                          769,000.00   638,999.49    35,000.00         0.00    35,000.00    20,000.00
Total ( 16 Rec.) Pour CSPONSOR          = TDC-EXT

                                                                         ===========  ===========  ===========  ===========  ===========  ===========
                                                                        5447,712.74  3981,769.10   884,549.49    94,722.08   767,828.37   258,385.00
Total ( 85 Rec.) Pour RSPB CNT          = 257150

                                                                         ===========  ===========  ===========  ===========  ===========  ===========
                                                                         35097183.32  24538919.94 5061,004.01  1322,015.00  3460,475.32  3997,203.12
 ### GRAND Total( 4[illegible]) Rec.) ###
```

TDC PROJECT LISTING BY SPONSORING AGENCY
AUTHORIZED FOR RESPONSIBILITY CENTRE AS OF SEPT 30/87

Liste pour : CSPONSOR : TDC-01M
RSPB CNT : 257100

PROJE	NOM CIE	TOT$AUTH	PREV YRS	BGT $ CY	ACT $ CY	BAL $ CY	BGT$FUT
6672	DIGI-PLUS INC.	59,675.00	0.00	59,675.00	0.00	59,675.00	0.00
6657	LES SYSTEMES SUR MESURE PB INC	300,000.00	246,816.49	53,088.50	53,088.50	0.00	0.00
6888	LES SYSTEMES SUR MESURE PB INC	200,000.00	0.00	200,000.00	15,765.31	168,100.70	0.00
6925	SANS CONTRACTANT	125,000.00	0.00	125,000.00	0.00	125,000.00	0.00
		684,675.00	246,816.49	437,763.50	68,853.81	352,775.70	0.00

Total (4 Rec.) Pour RSPB CNT = 257100

Liste pour : CSPONSOR : TDC-01M
RSPB CNT : 257110

PROJE	NOM CIE	TOT$AUTH	PREV YRS	BGT $ CY	ACT $ CY	BAL $ CY	BGT$FUT
6934		25,000.00	0.00	0.00	0.00	0.00	25,000.00
4594		0.00	0.00	0.00	0.00	0.00	0.00
6377		10,000.00	0.00	0.00	0.00	0.00	10,000.00
6890		15,000.00	0.00	15,000.00	0.00	15,000.00	0.00
6907		5,000.00	0.00	5,000.00	0.00	5,000.00	0.00
6797	BOMBARDIER INC.	100,000.00	0.00	100,000.00	0.00	100,000.00	0.00
6312	BRITISH COLUMBIA RAILWAY	94,725.00	48,462.49	24,500.00	0.00	24,500.00	21,762.51
6838	CANADIAN PACIFIC LIMITED	86,443.00	1,250.00	60,000.00	4,295.91	55,704.09	25,193.00
6799	CANARCTIC SHIPPING LTD	111,794.00	111,794.00	0.00	0.00	0.00	0.00
4288	CN RAIL	158,975.00	140,413.83	1,561.17	0.00	1,561.17	17,000.00
4102	CN RAIL	151,369.00	138,039.09	3,000.00	0.00	3,000.00	10,329.91
4567	CN RAIL	190,751.00	155,101.88	35,649.12	0.00	35,649.12	0.00
4929	CN RAIL	118,967.00	117,841.00	1,126.00	0.00	1,126.00	0.00
6626	COLDSTREAM MARITIME INC.	55,000.00	47,832.29	7,167.71	7,004.15	163.56	0.00
6663	DEPT. OF NATIONAL DEFENCE	17,205.16	0.00	17,205.16	0.00	17,205.16	0.00
6778	DEPT. OF NATIONAL DEFENCE	8,277.00	6,580.38	1,696.62	0.00	1,696.62	0.00
6745	DYNAMIC SCIENCES LIMITED	30,622.30	30,622.30	0.00	0.00	0.00	0.00
6600	FISHERIES RESOURCE DEVEL. LTD	95,453.13	64,781.00	30,672.13	0.00	30,672.13	0.00
6975	NAUGHAN RLY CNSLTG SERV INC.	50,000.00	0.00	25,000.00	0.00	25,000.00	25,000.00
6311	NAUGHAN RLY CNSLTG SERV INC.	38,738.77	38,738.47	0.00	0.00	0.00	0.00
6658	NAUGHAN RLY CNSLTG SERV INC.	20,000.00	19,993.56	0.00	0.00	0.00	0.00
6709	MELVILLE SHIPPING LTD	62,437.00	4,753.00	57,684.00	21,128.00	36,556.00	0.00
6780	MELVILLE SHIPPING LTD	232.33	0.00	232.33	0.00	232.33	0.00
6910	MELVILLE SHIPPING LTD	45,757.00	0.00	45,757.00	0.00	45,757.00	0.00
6746	MPB TECHNOLOGIES INC.	10,000.00	0.00	0.00	0.00	0.00	10,000.00
4444	NATIONAL RESEARCH COUNCIL	3,500.00	2,573.52	0.00	0.00	0.00	926.48

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                              BALANCE CARTE MAITESSE
                              ======================
 87/10/05 [16:37:02]                                                          Page 1

 Liste pour : RSPB CNT          : 257100
 ----------------------------------------
 LIN O  TOT$AUTH    PREV YRS    BGT $ CY    ACT $ CY    SUSPENSE    BAL $ CY    BGT$FUT
 =====  ==========  ==========  ==========  ==========  ==========  ==========  ==========
  2311  215,000.00        0.00  215,000.00        0.00        0.00  215,000.00        0.00
        ==========  ==========  ==========  ==========  ==========  ==========  ==========
        215,000.00        0.00  215,000.00        0.00        0.00  215,000.00        0.00
 Total ( 1 Rec.) Pour RSPB CNT          = 257100

 Liste pour : RSPB CNT          : 257140
 ----------------------------------------
 LIN O  TOT$AUTH    PREV YRS    BGT $ CY    ACT $ CY    SUSPENSE    BAL $ CY    BGT$FUT
 =====  ==========  ==========  ==========  ==========  ==========  ==========  ==========
  2311   40,000.00        0.00   40,000.00        0.00        0.00   40,000.00        0.00
        ==========  ==========  ==========  ==========  ==========  ==========  ==========
         40,000.00        0.00   40,000.00        0.00        0.00   40,000.00        0.00
 Total ( 1 Rec.) Pour RSPB CNT          = 257140

 Liste pour : RSPB CNT          : 257100
 ----------------------------------------
 LIN O  TOT$AUTH    PREV YRS    BGT $ CY    ACT $ CY    SUSPENSE    BAL $ CY    BGT$FUT
 =====  ==========  ==========  ==========  ==========  ==========  ==========  ==========
  2398  -5207265.44       0.00  -4320995.01 -220186.00  -174356.00  -3926453.01 -886270.43
        ==========  ==========  ==========  ==========  ==========  ==========  ==========
        -5207265.44       0.00  -4320995.01 -220186.00  -174356.00  -3926453.01 -886270.43
 Total ( 1 Rec.) Pour RSPB CNT          = 257100

 Liste pour : RSPB CNT          : 257110
 ----------------------------------------
 LIN O  TOT$AUTH    PREV YRS    BGT $ CY    ACT $ CY    SUSPENSE    BAL $ CY    BGT$FUT
 =====  ==========  ==========  ==========  ==========  ==========  ==========  ==========
  2398  7028,124.44 4543,518.76 1971,443.92 314,573.37   74,665.61 1582,205.54  513,161.17
        ==========  ==========  ==========  ==========  ==========  ==========  ==========
        7028,124.44 4543,518.76 1971,443.92 314,573.37   74,665.61 1582,205.54  513,161.17
 Total ( 1 Rec.) Pour RSPB CNT          = 257110

 Liste pour : RSPB CNT          : 257120
 ----------------------------------------
 LIN O  TOT$AUTH    PREV YRS    BGT $ CY    ACT $ CY    SUSPENSE    BAL $ CY    BGT$FUT
 =====  ==========  ==========  ==========  ==========  ==========  ==========  ==========
  2398  10864793.71 5510,357.51 3322,309.51 663,339.58  260,471.26 2398,499.54 2032,125.25
        ==========  ==========  ==========  ==========  ==========  ==========  ==========
        10864793.71 5510,357.51 3322,309.51 663,339.58  260,471.26 2398,499.54 2032,125.25
 Total ( 1 Rec.) Pour RSPB CNT          = 257120

 Liste pour : RSPB CNT          : 257130
 ----------------------------------------
 LIN O  TOT$AUTH    PREV YRS    BGT $ CY    ACT $ CY    SUSPENSE    BAL $ CY    BGT$FUT
 =====  ==========  ==========  ==========  ==========  ==========  ==========  ==========
  2398  7024,659.04 3660,205.96 1755,271.27 218,797.90   51,688.28 1484,785.12 1609,181.78
        ==========  ==========  ==========  ==========  ==========  ==========  ==========
        7024,659.04 3660,205.96 1755,271.27 218,797.90   51,688.28 1484,785.12 1609,181.78
 Total ( 1 Rec.) Pour RSPB CNT          = 257130
```

3.7.9

```
Liste pour : RSPB CNT          : 257140
----------------------------------------
LIN O  TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     SUSPENSE     BAL $ CY     BGT$FUT
=====  ===========  ===========  ===========  ===========  ===========  ===========  ===========
 2435    46,900.00         0.00    46,900.00     5,421.81     5,647.00    35,831.19         0.00
       ===========  ===========  ===========  ===========  ===========  ===========  ===========
         46,900.00         0.00    46,900.00     5,421.81     5,647.00    35,831.19         0.00
Total ( 1 Rec.) Pour RSPB CNT          = 257140

Liste pour : RSPB CNT          : 257120
----------------------------------------
LIN O  TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     SUSPENSE     BAL $ CY     BGT$FUT
=====  ===========  ===========  ===========  ===========  ===========  ===========  ===========
 7219  2146,478.00   222,372.72   779,104.43    71,252.05     1,855.65   705,996.73  1145,000.85
       ===========  ===========  ===========  ===========  ===========  ===========  ===========
       2146,478.00   222,372.72   779,104.43    71,252.05     1,855.65   705,996.73  1145,000.85
Total ( 1 Rec.) Pour RSPB CNT          = 257120

Liste pour : RSPB CNT          : 257130
----------------------------------------
LIN O  TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     SUSPENSE     BAL $ CY     BGT$FUT
=====  ===========  ===========  ===========  ===========  ===========  ===========  ===========
 7219   231,363.82   111,866.85   119,496.97    20,906.63     6,438.51    92,151.83         0.00
       ===========  ===========  ===========  ===========  ===========  ===========  ===========
        231,363.82   111,866.85   119,496.97    20,906.63     6,438.51    92,151.83         0.00
Total ( 1 Rec.) Pour RSPB CNT          = 257130

       ===========  ===========  ===========  ===========  ===========  ===========  ===========
       30762386.17  19760201.02  5859,978.09  1329,546.36   286,966.50  4243,467.69  5142,203.97
 *** GRAND Total( 15 Rec.) ***
```

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                                BALANCE CARTE MAITRESSE
                                =======================
87/10/05 [16:39:41]                                                                    Page 1

Liste pour : RSPB CNT          : 257110
----------------------------------------
LIN O  TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     SUSPENSE     BAL $ CY     BGT$FUT
=====  ===========  ===========  ===========  ===========  ===========  ===========  ===========
 2398  1834,794.37  1486,281.10     1,852.42     1,852.42         0.00         0.00         0.00
       ===========  ===========  ===========  ===========  ===========  ===========  ===========
       1834,794.37  1488,281.10     1,852.42     1,852.42         0.00         0.00         0.00
Total ( 1 Rec.) Pour RSPB CNT          = 257110


Liste pour : RSPB CNT          : 257120
----------------------------------------
LIN O  TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     SUSPENSE     BAL $ CY     BGT$FUT
=====  ===========  ===========  ===========  ===========  ===========  ===========  ===========
 2398  1025,334.20   869,759.95     5,312.70     5,312.70         0.00         0.00         0.00
       ===========  ===========  ===========  ===========  ===========  ===========  ===========
       1025,334.20   869,759.95     5,312.70     5,312.70         0.00         0.00         0.00
Total ( 1 Rec.) Pour RSPB CNT          = 257120


Liste pour : RSPB CNT          : 257130
----------------------------------------
LIN O  TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     SUSPENSE     BAL $ CY     BGT$FUT
=====  ===========  ===========  ===========  ===========  ===========  ===========  ===========
 2398  1018,203.96   590,503.44     4,737.37     4,737.37         0.00         0.00         0.00
       ===========  ===========  ===========  ===========  ===========  ===========  ===========
       1018,203.96   590,503.44     4,737.37     4,737.37         0.00         0.00         0.00
Total ( 1 Rec.) Pour RSPB CNT          = 257130


Liste pour : RSPB CNT          : 257140
----------------------------------------
LIN O  TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     SUSPENSE     BAL $ CY     BGT$FUT
=====  ===========  ===========  ===========  ===========  ===========  ===========  ===========
 2398   540,634.70   431,989.36        -1.96        -1.96         0.00         0.00         0.00
       ===========  ===========  ===========  ===========  ===========  ===========  ===========
        540,634.70   431,989.36        -1.96        -1.96         0.00         0.00         0.00
Total ( 1 Rec.) Pour RSPB CNT          = 257140


Liste pour : RSPB CNT          : 257150
----------------------------------------
LIN O  TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     SUSPENSE     BAL $ CY     BGT$FUT
=====  ===========  ===========  ===========  ===========  ===========  ===========  ===========
 2398  1358,071.74  1368,063.28         0.00         0.00         0.00         0.00         0.00
       ===========  ===========  ===========  ===========  ===========  ===========  ===========
       1358,071.74  1368,063.28         0.00         0.00         0.00         0.00         0.00
Total ( 1 Rec.) Pour RSPB CNT          = 257150


Liste pour : RSPB CNT          : 257100
----------------------------------------
LIN O  TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     SUSPENSE     BAL $ CY     BGT$FUT
=====  ===========  ===========  ===========  ===========  ===========  ===========  ===========
 2435   300,000.00   246,816.49    53,088.50    53,088.50         0.00         0.00         0.00
       ===========  ===========  ===========  ===========  ===========  ===========  ===========
        300,000.00   246,816.49    53,088.50    53,088.50         0.00         0.00         0.00
Total ( 1 Rec.) Pour RSPB CNT          = 257100
```

```
Liste pour : RSPB CNT         : 257140
----------------------------------------
LIN O  TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     SUSPENSE     BAL $ CY     BGT$FUT
=====  ===========  ===========  ===========  ===========  ===========  ===========  ===========
 2435   167,600.00   117,544.87    19,638.29    19,638.29         0.00         0.00         0.00
       ===========  ===========  ===========  ===========  ===========  ===========  ===========
        167,600.00   117,544.87    19,638.29    19,638.29         0.00         0.00         0.00
Total ( 1 Rec.) Pour RSPB CNT          = 257140

       ===========  ===========  ===========  ===========  ===========  ===========  ===========
       6244,638.97  5112,958.49    84,627.32    84,627.32         0.00         0.00         0.00
 *** GRAND Total( 7 Rec.) ***
```

ACTIVE CONTRACTS (OBJ.=23) AND CONTRIBUTIONS (OBJ.=70) BY RESPONSIBILITY CENTRE AS OF SEPT 30/87

3.7.10

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87/10/05 [16:06:05]                                                                                                          Page 1

Liste pour : RSPB CNT        : 257100
             LIN OBJT        :  2311
-------------------------------------
PROJE NOM CIE                        SPONS. ORG. NAME                 TOT$AUTH     PREV YRS    BGT $ CY    ACT $ CY    SUSPENSE    BAL $ CY    BGT$FUT
===== ============================== ============================== =========== =========== =========== =========== =========== =========== ===========
 6927 SANS CONTRACTANT               ACDB                            50,000.00        0.00   50,000.00        0.00        0.00   50,000.00        0.00
 6928 SANS CONTRACTANT               ACDB                            30,000.00        0.00   30,000.00        0.00        0.00   30,000.00        0.00
 6925 SANS CONTRACTANT               TRANSPORT DEV. CENTRE          125,000.00        0.00  125,000.00        0.00        0.00  125,000.00        0.00
 6929 SANS CONTRACTANT               ACDB                            10,000.00        0.00   10,000.00        0.00        0.00   10,000.00        0.00
                                                                 =========== =========== =========== =========== =========== =========== ===========
                                                                  215,000.00        0.00  215,000.00        0.00        0.00  215,000.00        0.00
Total ( 4 Rec.) Pour LIN OBJT        =  2311


Liste pour : RSPB CNT        : 257100
             LIN OBJT        :  2398
-------------------------------------
PROJE NOM CIE                        SPONS. ORG. NAME                 TOT$AUTH     PREV YRS    BGT $ CY    ACT $ CY    SUSPENSE    BAL $ CY    BGT$FUT
===== ============================== ============================== =========== =========== =========== =========== =========== =========== ===========
 6923                                ACDB                           -830150.86        0.00  -830150.86        0.00  -67,384.00  -762766.86        0.00
 6924                                DSS                           -1740789.58        0.00 -1740789.58  -220186.00        0.00 -1520603.58        0.00
 6922 C-TECH LTD                     ACDB                          -2696000.00        0.00 -1809729.57        0.00 -106972.00 -1702757.57  -886270.43
 6672 DIGI-PLUS INC.                 TRANSPORT DEV. CENTRE           59,675.00        0.00   59,675.00        0.00        0.00   59,675.00        0.00
                                                                 =========== =========== =========== =========== =========== =========== ===========
                                                                 -5207265.44        0.00 -4320995.01  -220186.00  -174356.00 -3926453.01  -886270.43
Total ( 4 Rec.) Pour LIN OBJT        =  2398


Liste pour : RSPB CNT        : 257100
             LIN OBJT        :  2435
-------------------------------------
PROJE NOM CIE                        SPONS. ORG. NAME                 TOT$AUTH     PREV YRS    BGT $ CY    ACT $ CY    SUSPENSE    BAL $ CY    BGT$FUT
===== ============================== ============================== =========== =========== =========== =========== =========== =========== ===========
 6888 LES SYSTEMES SUR MESURE PB INC TRANSPORT DEV. CENTRE          200,000.00        0.00  200,000.00   15,765.31   16,133.99  168,100.70        0.00
                                                                 =========== =========== =========== =========== =========== =========== ===========
                                                                  200,000.00        0.00  200,000.00   15,765.31   16,133.99  168,100.70        0.00
Total ( 1 Rec.) Pour LIN OBJT        =  2435


                                                                 =========== =========== =========== =========== =========== =========== ===========
                                                                 -4792265.44        0.00 -3905995.01  -204420.69  -158222.01 -3543352.31  -886270.43
Total ( 9 Rec.) Pour RSPB CNT        = 257100
```

Liste pour : RSPB CNT : 257150
LIN OBJT : 2398

PROJE	NOM CIE	SPONS. ORG. NAME	TOT$AUTH	PREV YRS	BGT $ CY	ACT $ CY	SUSPENSE	BAL $ CY	BGT$FUT
6763	GENTEC INC.	TRANSPORT DEV. CENTRE	66,115.00	66,115.00	0.00	0.00	0.00	0.00	0.00
6174	GERMAN AND MILNE	TRANSPORT DEV. CENTRE	104,000.00	103,599.05	400.96	0.00	0.00	400.96	0.00
6862	ICE CONTROL ENTREPRISES INC.	TRANSPORT DEV. CENTRE	2,850.00	0.00	2,850.00	0.00	0.00	2,850.00	0.00
6863	ICE CONTROL ENTREPRISES INC.	DSS	15,000.00	15,000.00	0.00	0.00	0.00	0.00	0.00
6864	ICE CONTROL ENTREPRISES INC.	TRANSPORT DEV. CENTRE	31,786.05	31,786.05	0.00	0.00	0.00	0.00	0.00
6865	ICE CONTROL ENTREPRISES INC.	PORTS CANADA	12,000.00	12,000.00	0.00	0.00	0.00	0.00	0.00
6866	ICE CONTROL ENTREPRISES INC.	PORTS CANADA	-12,000.00	0.00	-12,000.00	-12,000.00	0.00	0.00	0.00
6003	MARTEC LIMITED	TRANSPORT DEV. CENTRE	63,480.00	63,475.75	4.25	0.00	0.00	4.25	0.00
6004	MARTEC LIMITED	MEP-TRNS	175,676.26	175,676.26	0.00	0.00	0.00	0.00	0.00
6005	MARTEC LIMITED	CMTA	68,000.00	67,999.99	0.00	0.00	0.00	0.00	0.00
6556	MELVILLE SHIPPING LTD	CMTA	100,171.69	100,171.69	0.00	0.00	0.00	0.00	0.00
6770	MELVILLE SHIPPING LTD	CANADIAN COAST GUARD	25,000.00	25,000.00	0.00	0.00	0.00	0.00	0.00
6971	MELVILLE SHIPPING LTD	TRANSPORT DEV. CENTRE	34,794.00	0.00	34,794.00	0.00	0.00	34,794.00	0.00
6972	MELVILLE SHIPPING LTD	DSS	50,000.00	0.00	50,000.00	0.00	0.00	50,000.00	0.00
6973	MELVILLE SHIPPING LTD	NATIONAL RESEARCH COUNCIL	-35,000.00	0.00	-35,000.00	0.00	0.00	-35,000.00	0.00
6974	MELVILLE SHIPPING LTD	NATIONAL RESEARCH COUNCIL	35,000.00	0.00	35,000.00	0.00	0.00	35,000.00	0.00
6853	NUNASI CORPORATION	TRANSPORT DEV. CENTRE	80,000.00	34,000.00	46,000.00	0.00	22,000.00	24,000.00	0.00
6535	POLAR SEA RESEARCH LIMITED	TRANSPORT DEV. CENTRE	29,116.00	29,115.37	0.00	0.00	0.00	0.63	0.00
6537	POLAR SEA RESEARCH LIMITED	CANADIAN COAST GUARD	15,000.00	15,000.00	0.00	0.00	0.00	0.00	0.00
6765	ROBERT ALLAN LTD.,	TRANSPORT DEV. CENTRE	90,900.00	24,394.09	66,505.91	0.00	0.00	66,505.91	0.00
6342	SABLE MARITIME LTD	TRANSPORT DEV. CENTRE	100,000.00	99,987.51	12.49	0.00	0.00	12.49	0.00
4591	SEASPAN DEVELOPMENT CO. LTD	TRANSPORT DEV. CENTRE	29,500.00	29,240.00	260.00	0.00	0.00	260.00	0.00
6673	SEATRONICS TECHNOLOGIES LTD	TRANSPORT DEV. CENTRE	93,900.00	0.00	63,000.00	10,531.90	0.00	52,468.10	30,900.00
6674	SEATRONICS TECHNOLOGIES LTD	MEP-CONS	100,000.00	59,253.50	40,746.50	40,746.50	0.00	0.00	0.00
6102	SEATRONICS TECHNOLOGIES LTD	TRANSPORT DEV. CENTRE	169,822.00	169,821.76	0.00	0.00	0.00	0.24	0.00
4540	UNIVERSITY OF BRITISH COLUMBIA	TRANSPORT DEV. CENTRE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6783	VALMET ARCTIC CANADA LTD	TRANSPORT DEV. CENTRE	69,700.00	42,374.99	27,325.01	26,306.31	0.00	1,018.70	0.00
			3756,641.00	2613,705.82	884,549.49	94,722.08	22,000.00	767,828.37	258,385.00
	Total (60 Rec.) Pour LIN OBJT	= 2398							
			3756,641.00	2613,705.82	884,549.49 ✓	94,722.08	22,000.00	767,828.37	258,385.00 ✓
	Total (60 Rec.) Pour RSPB CNT	= 257150							
			30777386.17	19760201.02	5874,978.09	1329,344.52	287,012.15	4258,623.88	5142,203.97
	### GRAND Total(383 Rec.) ###								

6/10/8

COMPLETED CONTRACTS (OBJ.=23) AND CONTRIBUTIONS (OBJ.=70) BY RESPONSIBILITY CENTRE AS OF SEPT 30/87

3.7.11

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                                                                                                           Page 1
87/10/05 [16:09:36]

Liste pour : RSPB CNT        : 257100
             LIN OBJT        :   2435
--------------------------------------------
PROJE  NOM CIE                          SPONS. ORG. NAME                 TOT$AUTH    BGT $ CY    ACT $ CY    BAL $ CY    BGT$FUT
=====  ===============================  ===============================  ==========  ==========  ==========  ==========  ==========
 6657  LES SYSTEMES SUR MESURE PB INC   TRANSPORT DEV. CENTRE            300,000.00   53,088.50   53,088.50        0.00        0.00
                                                                         ==========  ==========  ==========  ==========  ==========
                                                                         300,000.00   53,088.50   53,088.50        0.00        0.00

Total ( 1 Rec.) Pour LIN OBJT            =  2435

                                                                         ==========  ==========  ==========  ==========  ==========
                                                                         300,000.00   53,088.50   53,088.50        0.00        0.00

Total ( 1 Rec.) Pour RSPB CNT            = 257100
```

6/10/87

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Liste pour : RSPB CNT           : 257150
             LIN OBJT           :  2398
--------------------------------------------
PROJE  NOM CIE                          SPONS. ORG. NAME                  TOT$AUTH     BGT $ CY     ACT $ CY     BAL $ CY     BGT$FUT
=====  ==============================  ==============================   ===========  ===========  ===========  ===========  ===========
 6893                                   APP-I-PP                          -100000.00         0.00         0.00         0.00         0.00
 6321  ARCTEC CANADA LIMITED            CMTA                              296,264.15         0.00         0.00         0.00         0.00
 6322  ARCTEC CANADA LIMITED            TRANSPORT DEV. CENTRE              89,994.85         0.00         0.00         0.00         0.00
 6356  ARCTEC CANADA LIMITED            TRANSPORT DEV. CENTRE              40,000.00         0.00         0.00         0.00         0.00
 6357  ARCTEC CANADA LIMITED            NEP-TRNS                           50,000.00         0.00         0.00         0.00         0.00
 6737  ARCTEC CANADA LIMITED            TRANSPORT DEV. CENTRE             180,560.00         0.00         0.00         0.00         0.00
 6738  ARCTEC CANADA LIMITED            NEP-TRNS                          150,000.00         0.00         0.00         0.00         0.00
 6772  ARCTEC CANADA LIMITED            CANADIAN COAST GUARD               50,000.00         0.00         0.00         0.00         0.00
 6452  EYRETECHNICS LIMITED             TRANSPORT DEV. CENTRE              39,999.43         0.00         0.00         0.00         0.00
 6555  MELVILLE SHIPPING LTD            NEP-TRNS                          153,983.31         0.00         0.00         0.00         0.00
 6557  MELVILLE SHIPPING LTD            CANADIAN COAST GUARD              113,000.00         0.00         0.00         0.00         0.00
 6700  MELVILLE SHIPPING LTD            NEP-TRNS                           24,816.00         0.00         0.00         0.00         0.00
 6016  SIMON FRASER UNIVERSITY          TRANSPORT DEV. CENTRE              20,000.00         0.00         0.00         0.00         0.00
 4481  UNIVERSITY OF TORONTO - UTIAS    NEP-TRNS                          249,454.00         0.00         0.00         0.00         0.00
                                                                         ===========  ===========  ===========  ===========  ===========
                                                                        1358,071.74         0.00         0.00         0.00         0.00
Total ( 14 Rec.) Pour LIN OBJT          =  2398


                                                                         ===========  ===========  ===========  ===========  ===========
                                                                        1358,071.74         0.00         0.00         0.00         0.00
Total ( 14 Rec.) Pour RSPB CNT          = 257150


                                                                         ===========  ===========  ===========  ===========  ===========
                                                                        6244,638.97    84,627.32    84,627.32         0.00         0.00
 *** GRAND Total( 77 Rec.) ***
```

6/10/87

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                                TDC PROJECT LISTING BY SPONSORING AGENCY
                            AUTHORIZED FOR RESPONSIBILITY CENTRE AS OF SEPT 30/87

Liste pour : CSPONSOR         : LIQS
             RSPB CNT         : 257100
----------------------------------------------
PROJE  NOM CIE                      TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     BAL $ CY     BGT$FUT
=====  ============================ ===========  ===========  ===========  ===========  ===========  ===========
 6929                                10,000.00         0.00    10,000.00         0.00    10,000.00         0.00
                                    ===========  ===========  ===========  ===========  ===========  ===========
                                     10,000.00         0.00    10,000.00         0.00    10,000.00         0.00
Total ( 1 Rec.) Pour RSPB CNT      = 257100

Liste pour : CSPONSOR         : LIQS
             RSPB CNT         : 257110
----------------------------------------------
PROJE  NOM CIE                      TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     BAL $ CY     BGT$FUT
=====  ============================ ===========  ===========  ===========  ===========  ===========  ===========
 6304  BOMBARDIER INC.              340,058.07   340,058.08         0.00         0.00        -0.01         0.00
 6798  BOMBARDIER INC.              300,000.00         0.00   200,000.00    30,003.86   159,677.93   100,000.00
 6832  BOMBARDIER INC.               74,600.00    11,400.00    63,200.00    37,203.85    17,793.11         0.00
                                    ===========  ===========  ===========  ===========  ===========  ===========
                                    714,658.07   351,458.08   263,200.00    67,207.71   177,471.03   100,000.00
Total ( 3 Rec.) Pour RSPB CNT      = 257110

Liste pour : CSPONSOR         : LIQS
             RSPB CNT         : 257140
----------------------------------------------
PROJE  NOM CIE                      TOT$AUTH     PREV YRS     BGT $ CY     ACT $ CY     BAL $ CY     BGT$FUT
=====  ============================ ===========  ===========  ===========  ===========  ===========  ===========
 6804                               135,000.00         0.00   135,000.00         0.00   135,000.00         0.00
 6282  ALCAN INTERNATIONAL LIMITED  110,000.00   110,000.00         0.00         0.00         0.00         0.00
 6774  MOLI ENERGY LIMITED           40,000.00    40,000.00         0.00         0.00         0.00         0.00
                                    ===========  ===========  ===========  ===========  ===========  ===========
                                    285,000.00   150,000.00   135,000.00         0.00   135,000.00         0.00
Total ( 3 Rec.) Pour RSPB CNT      = 257140

                                    ===========  ===========  ===========  ===========  ===========  ===========
                                   1009,658.07   501,458.08   408,200.00    67,207.71   322,471.03   100,000.00
Total ( 7 Rec.) Pour CSPONSOR      = LIQS

                                    ===========  ===========  ===========  ===========  ===========  ===========
                                   5843,284.76  5454,280.98   -62,086.00   256,105.70  -256503.27   -31,915.47
  *** GRAND Total( 65 Rec.) ***
```

3.7.12

VERIFICATION ET RECONCILIATION
DES RETENUES SUR LES PROJETS

87/10/05

3.7.13

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87/10/05 [16:31:48]                                                                                                     Page 1

Liste pour : RSPB CNT         : 257100
--------------------------------------
PROJE  NOM CIE                          SPONS. ORG. NAME                 PRJT TTL                          HLDBKCUM     HOLDBACK     STATUS
=====  ===============================  ===============================  ================================  ===========  ===========  ========
 6888  LES SYSTEMES SUR MESURE PB INC   TRANSPORT DEV. CENTRE            COMPUTER SYSTEMS SUPPORT 87/88      -1,576.53    -1,576.53  ACTIVE
                                                                                                           ===========  ===========
                                                                                                             -1,576.53    -1,576.53

Total ( 1 Rec.) Pour RSPB CNT          = 257100                                                                 ✓
```

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                                                                                                                    Page 6
Liste pour : RSPB CNT          : 257150
---------------------------------------------
PROJE  NOM CIE                          SPONS. ORG. NAME                 PRJT TTL                          HLDRKCUM     HOLDBACK     STATUS
=====  ===============================  ===============================  ===============================  ===========  ===========  ========
 4239  B.H. LEVELTON & ASSOCIATES LTD   TRANSPORT DEV. CENTRE            HULL CORROSION                     -5,930.38         0.00  PRE-AME
 4591  SEASPAN DEVELOPMENT CO. LTD      TRANSPORT DEV. CENTRE            MINIMUM RESISTANCE BARGE           -2,924.00         0.00  ACTIVE
 6003  MARTEC LIMITED                   TRANSPORT DEV. CENTRE            PROPELLER/ICE FE MODEL PHASE 2    -19,655.11         0.00  ACTIVE
 6004  MARTEC LIMITED                   NEP-TRNS                         PROPELLER/ICE FE MODEL PHASE 2     -9,981.46         0.00  ACTIVE
 6005  MARTEC LIMITED                   CMTA                             PROPELLER/ICE FE MODEL PHASE 2     -1,074.80         0.00  ACTIVE
 6102  SEATRONICS TECHNOLOGIES LTD      TRANSPORT DEV. CENTRE            ENERGY EFFECTIVE TUG & BARGE      -16,981.96         0.00  ACTIVE
 6342  SABLE MARITIME LTD               TRANSPORT DEV. CENTRE            TIES - MARINE TRANSPORTATION       -3,666.99         0.00  ACTIVE
 6459  CANADIAN MARINE DRILLING LTD     CANADIAN COAST GUARD             ICE/PROP.ENGINEERING ANALYSIS      -6,307.97         0.00  ACTIVE
 6460  CANADIAN MARINE DRILLING LTD     NEP-TRNS                         ICE/PROP.ENGINEERING ANALYSIS     -21,487.24         0.00  ACTIVE
 6481  ARCTEC CANADA LIMITED            CANADIAN COAST GUARD             US POLAR CLASS PROGRAM 85/86      -10,519.36         0.00  ACTIVE
 6483  ARCTEC CANADA LIMITED            CMTA                             US POLAR CLASS PROGRAM 85/86      -23,192.77         0.00  ACTIVE
 6535  POLAR SEA RESEARCH LIMITED       TRANSPORT DEV. CENTRE            HF/ARCTIC SHIP SAFETY MEASUR'T     -2,911.52         0.00  ACTIVE
 6537  POLAR SEA RESEARCH LIMITED       CANADIAN COAST GUARD             HF/ARCTIC SHIP SAFETY MEASUR'T     -1,500.01         0.00  ACTIVE
 6613  DONALD CARTER, D. SC.,           TRANSPORT DEV. CENTRE            PROUES DE BRISE-GLACE              -2,430.92         0.00  ACTIVE
 6614  DONALD CARTER, D. SC.,           NEP-TRNS                         PROUES DE BRISE-GLACE             -13,519.08         0.00  ACTIVE
 6637  ARCTEC CANADA LIMITED            NEP-TRNS                         ADDED MASS AND DAMPING            -11,604.90         0.00  ACTIVE
 6639  ARCTEC CANADA LIMITED            CANADIAN COAST GUARD             ADDED MASS AND DAMPING             -9,937.94         0.00  ACTIVE
 6640  ARCTEC CANADA LIMITED            NEP-TRNS                         SEGMENTED MODEL ICE TESTS II      -15,243.32         0.00  ACTIVE
 6673  SEATRONICS TECHNOLOGIES LTD      TRANSPORT DEV. CENTRE            TUG/BARGE SYST DATA LOGGING        -1,053.19         0.00  ACTIVE
 6674  SEATRONICS TECHNOLOGIES LTD      NEP-CONS                         TUG/BARGE SYST DATA LOGGING       -10,000.00         0.00  ACTIVE
 6757  DONALD CARTER, D. SC.,           TRANSPORT DEV. CENTRE            STRIES BRISE-GLACE                 -3,739.86         0.00  ACTIVE
 6758  DONALD CARTER, D. SC.,           CANADIAN COAST GUARD             STRIES BRISE-GLACE                 -1,404.14         0.00  ACTIVE
 6763  GENTEC INC.                      TRANSPORT DEV. CENTRE            VELOCIMETRE A ULTRASON             -6,611.50         0.00  ACTIVE
 6765  ROBERT ALLAN LTD.,               TRANSPORT DEV. CENTRE            BARGE DIRECTIONAL STABILITY          -121.34         0.00  ACTIVE
 6777  ARCTEC CANADA LIMITED            TRANSPORT DEV. CENTRE            US POLAR CLASS PROGRAM 85/86       -1,618.32         0.00  ACTIVE
 6783  VALMET ARCTIC CANADA LTD         TRANSPORT DEV. CENTRE            JARSVAAR PROP/ICE STUDY            -6,868.13         0.00  PRE-AME
 6801  ARCTEC NEWFOUNDLAND LIMITED      TRANSPORT DEV. CENTRE            'R' CLASS - SCALE EFFECTS          -2,016.34    -1,329.40  ACTIVE
 6802  ARCTEC NEWFOUNDLAND LIMITED      CANADIAN COAST GUARD             'R' CLASS - SCALE EFFECTS            -832.98         0.00  ACTIVE
 6864  ICE CONTROL ENTREPRISES INC.     TRANSPORT DEV. CENTRE            DEGLACAGE-PORT DE CHICOUTIMI       -4,378.60         0.00  ACTIVE
                                                                                                          ===========  ===========
Total ( 29 Rec.) Pour RSPB CNT          = 257150                                                           -217514.13    -1,329.40


                                                                                                          ===========  ===========
*** GRAND Total( 136 Rec.) ***                                                                            -1328668.36   -15,811.30
```

✓

```
MONTHLY RECONCILIATION REPORT OF CONTRACT EXPENDITURES AS OF 87/10/05

REPORT 1: 'DSS BATCH' LISTING FOR MONTH ->          6
```

3.7.14

```
Liste pour : MONTH              : SEPTMBRE
             BATCH ID           : -
-------------------------------------------
DATE TRN  RSPB C  .PROJ  TYPE    AMOUNT
========  ======  =====  =====  ===========
87/09/23  257140   6736  50925       373.50
87/09/29  257140   6818  -         5,413.92
87/09/29  257140   6820  -        -5,413.92
                                ===========
                                     373.50
Total ( 3 Rec.) Pour BATCH ID          = -


Liste pour : MONTH              : SEPTMBRE
             BATCH ID           : 0005
-------------------------------------------
DATE TRN  RSPB C  .PROJ  TYPE    AMOUNT
========  ======  =====  =====  ===========
87/09/10  257130   6593  50739     4,796.69
87/09/10  257120   6606  50730     6,484.42
87/09/10  257140   6704  50736     2,525.00
87/09/10  257120   6713  50735     1,577.25
87/09/10  257100   6888  50738    15,765.31
                                ===========
                                  31,148.67
Total ( 5 Rec.) Pour BATCH ID          = 0005


Liste pour : MONTH              : SEPTMBRE
             BATCH ID           : 0006
-------------------------------------------
DATE TRN  RSPB C  .PROJ  TYPE    AMOUNT
========  ======  =====  =====  ===========
87/09/17  257120   6609  50747    31,369.70
87/09/17  257110   6626  50742     3,975.30
87/09/17  257130   6661  50746    10,712.94
87/09/17  257130   6717  50740       168.41
87/09/17  257130   6717  50740     1,421.93
87/09/17  257130   6717  50740       551.23
87/09/17  257130   6717  50740       920.34
87/09/17  257130   6717  50740       695.62
87/09/17  257140   6820  50741    10,827.84
87/09/17  257140   6823  50748     4,428.67
87/09/17  257140   6880  50744       640.81
87/09/17  257140   6882  50750         9.75
```

```
87/10/05 [15:59:43]

Liste pour : MONTH             : SEPTMBRE
             BATCH ID          : 0024
-----------------------------------------
DATE TRN  RSPB C  .PROJ  TYPE   AMOUNT
========  ======  =====  =====  ===========
87/09/25  257100   6924  5045    -27,144.10
                                ===========
                                       0.00
Total ( 2 Rec.) Pour BATCH ID         = 0024

                                ===========
                                 239,159.01
Total ( 45 Rec.) Pour MONTH             = SEPTMBRE

                                ===========
                                 239,159.01
 *** GRAND Total( 45 Rec.) ***
```

```
MONTHLY RECONCILIATION REPORT OF CONTRACT EXPENDITURES AS OF 87/10/05

REPORT 2: 'G / L TOTALS' FOR MONTH ->          6
```

3.7.15

```
7/10/05 [16:02:02]                                                                    Page 1

Liste pour : RSPB CNT         : 257100
             LIN OBJT         :  2398
--------------------------------------
NOM CIE                         SPONS. ORG. NAME                PROJE  ACT$/MNT     ACT $ CY
==============================  ==============================  =====  ===========  ===========
                                DSS                              6924   -85,602.87   -220186.00
                                                                       ===========  ===========

Total ( 1 Rec.) Pour LIN OBJT         =  2398

Liste pour : RSPB CNT         : 257100
             LIN OBJT         :  2435
--------------------------------------
NOM CIE                         SPONS. ORG. NAME                PROJE  ACT$/MNT     ACT $ CY
==============================  ==============================  =====  ===========  ===========
LES SYSTEMES SUR MESURE PB INC  TRANSPORT DEV. CENTRE            6657         0.00    53,088.50
LES SYSTEMES SUR MESURE PB INC  TRANSPORT DEV. CENTRE            6888    15,765.31    15,765.31
                                                                       ===========  ===========
                                                                         15,765.31    68,853.81
Total ( 2 Rec.) Pour LIN OBJT         =  2435                                                ✓

                                                                       ===========  ===========
                                                                        -69,837.56   -151332.19
Total ( 3 Rec.) Pour RSPB CNT         = 257100
```

```
7/10/05 [16:02:02]                                                                 Page 7

Liste pour : RSPB CNT          : 257150
             LIN OBJT          :  2398
-----------------------------------------
OM CIE                          SPONS. ORG. NAME                PROJE  ACT$/MNT     ACT $ CY
=============================== =============================== =====  ===========  ===========
ARCTEC CANADA LIMITED           NEP-TRNS                        6637         0.00     1,600.00
RCTEC NEWFOUNDLAND LIMITED      TRANSPORT DEV. CENTRE           6801    17,531.22    25,433.38
DONALD CARTER, D. SC.,          TRANSPORT DEV. CENTRE           6757         0.00     2,103.99
ICE CONTROL ENTREPRISES INC.    PORTS CANADA                    6866         0.00   -12,000.00
EATRONICS TECHNOLOGIES LTD      TRANSPORT DEV. CENTRE           6673         0.00    10,531.90
SEATRONICS TECHNOLOGIES LTD     NEP-CONS                        6674         0.00    40,746.50
VALMET ARCTIC CANADA LTD        TRANSPORT DEV. CENTRE           6783         0.00    26,306.31
                                                                       ===========  ===========
                                                                        17,531.22    94,722.08
otal ( 7 Rec.) Pour LIN OBJT         =  2398                                                ✓

                                                                       ===========  ===========
                                                                        17,531.22    94,722.08
Total ( 7 Rec.) Pour RSPB CNT        = 257150

                                                                       ===========  ===========
                                                                       239,159.01   1413,971.84
*** GRAND Total( 83 Rec.) ***

                                 SUMMARY REPORT OF TOTAL CONTRACT COMMITTMENTS AS OF SEPT 30/87

                                 T A B L E  A : BUDJET CY COMMITTMENTS FOR 'ACTIVE' CONTRACTS
                                  T A B L E  B : FUTURE YRS COMMITTMENTS FOR 'ACTIVE' CONTRACTS

                                 T A B L E  C : TOTAL AUTHORIZED $ VALUE OF 'COMPLETED' CONTRACTS
```

APPENDIX A - SECTION 3.8

```
                  *** MENU pour FORTIN          ***
                  -----------------------------------

   1- IMPRIMER le STATUT des CONTRAT       2- RAPPORT P&S
   3- TRANSACTION pour un CONTRACT         4- REFERENCE AUX ANNEES FISCALS

Choisissez une fonction->
```

```
87/11/09 [08:39:48]                                              Page 1

Liste pour : RSPB CNT          : 257120
             OFF PRJT          : AUDETTE
--------------------------------------------
PROJE  STATUS
=====  ==========
 6532  ACTIVE

Total ( 1 Rec.) Pour OFF PRJT          = AUDETTE

Liste pour : RSPB CNT          : 257120
             OFF PRJT          : POSLUNS
--------------------------------------------
PROJE  STATUS
=====  ==========
 6839  ACTIVE

Total ( 1 Rec.) Pour OFF PRJT          = POSLUNS


Total ( 2 Rec.) Pour RSPB CNT          = 257120


 *** GRAND Total( 2 Rec.) ***
```

3.8.1

RECORD OF CONSULTING AND PROFESSIONAL SERVICES

FORM TO BE COMPLETED IN ORIGINAL AND THREE COPIES
EITHER TYPEWRITTEN OR IN LEGIBLE HANDWRITING.

FILE NO : 1460-228 CONTRACT NO : 6532 DBS CODE

PREPARED BY : AUDETTE POSITION TITLE : PROJECT OFFICER

---

1. NAME AND LOCATION OF CONSULTANT :

INTERA TECHNOLOGIES LTD
1200-510 5TH STREET S. W.

CALGARY,ALBERTA
T2P 3S2

2. CONTRACT VALUE : 277,000.00

3. DATE OF AWARD : 85/09/20

4. COMPLETION DATE : 87/10/27

5. METHOD OF SELECTION : 5-5530

A) DATE OF MINISTERS PRIOR APPROVAL, IF APPLICABLE :

B) PROPOSALS INVITED ---- YES ---- NO

C) IF 'YES',LIST NAMES AND LOCATION OF CONSULTANTS
WHO SUBMITTED PROPOSALS :
(USE SEPARATE PAGE IF NECESARY)

D) IF 'NO',JUSTIFY SOLE SOURCE SELECTION:

E) QUOTE TREASURY BOARD OR CONTRACT REVIEW BOARD
APPROVAL NUMBER AND DATE, IF REQUIRED:

6. BRIEF DESCRIPTION OF WORK (PREFERABLY THE ACTUAL
WORDING OF THE CONTRACT)

ICE NAVIGATION WORKSTATION

3.8.2

APPENDIX A - SECTION 3.9

```
                    *** MENU pour ENERGY        ***
                    -----------------------------------

  1- MODIFIER LE MNT DEJA RECUPERER       2- RAPPORT GENERAL ENERGIE
  3- RAPPORT GENERAL INDIVIDUEL           4- RAPP/RECUP/FONDS/INDIVIDUEL
  5- RAPP/RECUP/FOND/ENERG/GENERAL        6- AJOUTER UN PROJET A UN SPONSOR
  7- MODIFIER SPONSOR OU/ET MNT AUT       8- MOD MNT RECUPER. POUR UN PROJE
  9- CREATION SPONSOR#/MNT AUT           10- TRANSACTION pour un CONTRACT
 11- REFERENCE AUX ANNEES FISCALS

Choisissez une fonction->
```

GENERAL PROGRAM INFORMATION

87/08/31

PROGRAM: CONS

SPONS #	AUTH. FUNDS	TDC #	TITLE	BGT $ CY	TOTAL	DIFFERENCE	ACT-CY	SUSPENSE	CONTROLE	CNT RSPB
	0.00	6329	SIMUL. FERROVIAIRE PORT DE MTL	0.00			0.00	0.00		257130
		6500	ADVANCED BUS SUSPENSION	0.00			0.00	0.00		257130
		6358	STANDARDS FOR SIGNAL PHASING	0.00			0.00	0.00		257140
		6384	BULK TRAILER II PHASE II	0.00			0.00	0.00		257130
		6403	ALRT IMPACT VANCOUVER	0.00			0.00	0.00		257140
		6316	LOCOMOTIVE FUEL SAVING SYSTEM	0.00			0.00	0.00		257110
		6572	SYNTHETIC LUBRICANT TEST PROGR	0.00			0.00	0.00		257130
		6145	NACELLE AIRFLOW OPT. (PITOT)	0.00			0.00	0.00		257120
		6147	GAS TURBINE CERAMICS PHASE 2	0.00			0.00	0.00		257120
		6167	NACELLE AIRFLOW OPT.(SCOOP)	0.00			0.00	0.00		257120
		6211	STOL ENERGY EFFICIENCY	0.00			0.00	0.00		257120
					0.00	0.00				
CA0216	265,000.00	6495	CO2 REFRIGERATION	119,500.00			50,887.60	0.00		257130
		6593	HEAVY VEHICLE FUEL CONSUMPTION	64,396.96			20,773.31	4,796.69		257130
		6884	TRUCK DRIVE TRAIN TRIBOLOGY	50,000.00			0.00	0.00		257130
		6901	KNOWLEDGE-BASED DISPATCHER HEL	60,052.00			0.00	0.00		257130
					293,948.96	-28,948.96				
CA0218	200,000.00	6928	DSS FEES CONS 1987-88	30,000.00			0.00	0.00		257100
		6872	KER-TRAIN BUS INSTALLATION	0.00			0.00	0.00		257140
		6617	CONDITIONNEMENT D'AIR-AUTOCARS	7,076.19			6,941.97	0.00		257130
					37,076.19	162,923.81				
CA0219	100,000.00	6820	INTEGRATED TRAFFIC SYSTEM	67,242.10			27,582.02	10,827.84		257140
					67,242.10	32,757.90				
CB0222	200,000.00	4801	INNOVATIVE AIRCRAFT CONFIG.	23,864.71			0.00	0.00		257120
		6590	AERONAUTICAL TECHNOLOGY INVEST	50,000.00			0.00	0.00		257120
					73,864.71	126,135.29				
CB0224	100,000.00	6834	RADIAL AXLE TRUCK TESTING PH 4	39,000.00			4,896.32	0.00		257110
		6563	RAILWAY MOTIVE POWER DEV.STUDY	34,496.64			26,918.67	0.00		257120
					73,496.64	26,503.36				
CB0226	50,000.00	6674	TUG/BARGE SYST DATA LOGGING	V 40,746.50			40,746.50	0.00		257150
					40,746.50	9,253.50				

SUB-TOTAL: 915,000.00

SUB-TOTAL: 586,375.10

3.9.1

```
                                                                  GENERAL PROGRAM INFORMATION                                   87/08/31
                                                                  ===========================
PROGRAM: LIGS
--------------------------------------------------------------------------------------------------------------------------------------------
SPONS # | AUTH. FUNDS |TDC # | TITLE                              | BGT $ CY     | TOTAL        | DIFFERENCE | ACT-CY        | SUSPENSE     | CONTROLE| CNT RSPB
--------------------------------------------------------------------------------------------------------------------------------------------
        |        0.00| 6774 |BC MOLICELL THERMAL MGT             |         0.00|              |            |          0.00|         0.00|         | 257140
        |            | 6282 |AL/AIR BATTERY FOR VEHICLES         |         0.00|              |            |          0.00|         0.00|         | 257140
        |            | 6304 |LABORATORY DIESEL ENGINE PH.3       |         0.00|              |            |          0.00|         0.00|         | 257110
        |            |      |                                    |             |         0.00 |       0.00 |              |             |         |
--------|------------|------|------------------------------------|-------------|--------------|------------|--------------|-------------|---------|---------
LB0235  |  300,000.00| 6798 |LABORATORY DIESEL ENGINE-PH.4       |\ 200,000.00|              |            |     19,389.45|    10,614.41|         | 257110
        |            |      |                                    |             | 200,000.00   |       0.00 |              |             |         |
--------|------------|------|------------------------------------|-------------|--------------|------------|--------------|-------------|---------|---------
LB0256  |   50,000.00| 6929 |DGS FEES 1987-88                    | ✓10,000.00|              |            |          0.00|         0.00|         | 257100
        |            | 6832 |DUAL FUEL RAIL LOCOMOTIVE           | ✓ 63,200.00|              |            |     26,994.85|    10,209.00|         | 257110
        |            |      |                                    |             |  73,200.00   | -23,200.00 |              |             |         |
--------|------------|------|------------------------------------|-------------|--------------|------------|--------------|-------------|---------|---------
LC0236  |   75,000.00| 6804 |PROPANE REFUELLING HARDWARE         |  135,000.00|              |            |          0.00|         0.00|         | 257140
        |            |      |                                    |             | 135,000.00   | -60,000.00 |              |             |         |
--------------------------------------------------------------------------------------------------------------------------------------------

  SUB-TOTAL:  325,000.00                                      SUB-TOTAL:  400,200.00
      TOTAL:  3[illegible],000.00                                      TOTAL:  406,200.00
GRAND TOTAL: 2455,000.00                                    GRAND TOTAL: 1917,678.53

*** LES DEFENSES CUMULATIVES DEPASSENT LE TOTAL AUTORISE
```

Coal Supply.

TR 0109

3.9.2

```
[illegible]                                        [illegible]

PROGRAMME: L105

                                                   [illegible]
CENTRE DE RESPONSABILITE: 257140
RESPONSABILITY CENTRE    :

------------------------------------------------------------------------------------------------------------------------------------
#PROJ | CONTRACTANT/CONTRATOR          | [illegible] PROJET              |MNT A RECOUVRER| MNT RECUPERE| DCY & CY     | STATUT   | MNT AUTORISE| SPONS #
      |                                |                                 |MNT TO BE RECOV| MNT RECOVERED|             | STATUS   |MNT AUTHORIZED|
------------------------------------------------------------------------------------------------------------------------------------
 6804 |                                | PROPANE REFUELLING HARDWARE     |          0    |          0 |    135,000  |NEGOTIAT  |    135,000 | LC0036
      |                                |                                 |               |            |             |          |            |
------------------------------------------------------------------------------------------------------------------------------------

                TOTAL DU CENTRE DE RESPONSABILITE: 257140        0              0      135,000                   135,000
                TOTAL OF RESPONSABILITY CENTRE   :
                     GRAND TOTAL DU PROGRAMME: L105         44,585         67,207      408,200                   408,200
                          TOTAL OF PROGRAM:

                                     GRAND TOTAL:          147,537        254,505    1,734,049                 2,306,322
```

3.9.3

```
                                        [illegible]
                                        [illegible]

PROGRAMME: COAL SUPLY

                                        POUR LA PERIODE SE TERMINANT LE SEPT [illegible]
                                                       FOR THE PERIOD OF:

 ENTRE DE RESPONSABILITE: 257110
RESPONSABILITY CENTRE    :

-------------------------------------------------------------------------------------------------------------------------------
#PROJ | CONTRACTANT/CONTRATOR          | TITRE/TITLE PROJET             |MNT A RECOUVRER| MNT RECUPERE| BCY $ CY    | STATU|  | MNT AUTORISE| SPON. |
      |                                |                                |MNT TO BE RECOU| MNT RECOUFED|             | STATUS  |MNT AUTHORIZE|
-------------------------------------------------------------------------------------------------------------------------------
 6815 |                                | 2ND GENERATION UNIT COAL TRAIN |        0    |          0 |            0 |TERMINAT  |      233,000 |  TR3209
      |                                |                                |             |            |              |          |              |
-------------------------------------------------------------------------------------------------------------------------------

                      TOTAL DU CENTRE DE RESPONSABILITE: 257110        0            0            0                     233,000
                      TOTAL OF RESPONSABILITY CENTRE    :

                           GRAND TOTAL DU PROGRAMME: COAL-SUP        0            0            0                     233,000
                                     TOTAL OF PROGRAM:
```

Rapport final
[illegible] Septembre '87.

APPENDIX A - SECTION 3.10

*** MENU MAJ ***

```
 1- "PRE-INVOICE" Procedure                2- "REVISED INCURRED" Procedure
 3- "CORRECT INVOICE" Procedure            4- "HOLDBACK" Procedure
 5- TRANS.<83 pour un CONTRAT              6- "AMENDMENT" of a contract.
 7- Recalcul du numero d'ACTIVITE          8- "INVOICE" Procedure
 9- Copie un contrat de FY 86->87         10- TRANSACTION pour un CONTRACT
11- Creation d'un nouvel ORGANISME        12- initialiser le mois
13- "DIRECT INVOICE" procedure            14- Changement De Date /STATUS RPT
15- CHERCHER LES CNTS PAR REQUISI.        16- CREATION D'UN "TIES"
17- MODIF. A UN "TIES"/FIN "CAPAF"        18- MAJ DU FICHIER "TIES"/#PROJET
19- TRANS. POUR "TIES" OU "CAPAFE"        20- Changement de Statut/Fermeture
21- MODIFICATION CARTE MAITRESSE          22- REFERENCE AUX ANNEES FISCALS
23- MAJ MIS FORM (PAGE 2 & 3)             24- MAJ MIS FORM (PAGE 1 & 2)
25- MOD D'ADRESSE "ORG. PARRAINANT        26- CREATION D'UN ORG. PARRAINANT
27- MAJ MIS FORM (PAGE 4)                 28- CREATE PROJECT RELATED INFO.
29- MONTANT PAYE CONTRE LA CAPAFE         30- Creation d'un NOUVEAU Contrat
31- FAIRE LES LIENS D'UN "TIES"           32- Revision d'un "NOUVEAU"
33- DULPICATION D'UN CONTRAT              34- Acceptation d'un Contrat/amend
35- "PRE-HOLD" PROCEDURE                  36- MODIFICATION DU # FACTURE
37- CREE UN "MODAL OBJ. CATEGORIE"        38- MODIFY "MODAL OBJ. CATEGORIE"
39- Revision des Fonds de Contrat         40- PRINT MIS FORMS

Choisissez une fonction->
```

```
CONTRACT # : 4517                            RESPONSIBILITY CENTRE :106620
CONTRACTOR :              SNC INC.
P.O.- MORGAN             'FEASIBILITY OF DISC ENGINE    '     STATUS : ACTIVE
-------------------------------------------------------------------------------
REQUISITION NO. 1-1546          R&D ACTIVITY:  9775    TDC FILE NO.:1465-365
A-I-P DATE: 81/09/10       START DATE :81/11/26  FINAL REPORT DELIVERY: 82/12/15
CONTRACT | PAID CY-2:        0.00    FUT. YRS:        0.00  TOT $ AUTH: 131,768.00
   TERMS | PAID CY-1:        0.00    BGT CY+1:  76,768.00    SPONSOR : CONS
         | BGT  CY  :  55,000.00    EST.$ CY:  55,000.00    PRINTED :[87/11/09]
-------------------------------------------------------------------------------
 TRNS DATE  REF.#  VOUCHER     MONTH       AMOUNT     PAID TO DATE  NOT YET PAID
----------  -----  ----------  -----     ----------  ------------  ------------
  82/05/11    726  50398       14 EME     32,940.00     32,940.00     98,828.00
  82/05/11   1103  50398       14 EME     21,960.00     54,900.00     76,868.00
  82/07/19    104  50476       JUILLET    10,980.00     65,880.00     65,888.00
  82/08/26   1408  50673       AOUT       10,980.00     76,860.00     54,908.00
  82/08/27   1936  50793       AOUT       10,980.00     87,840.00     43,928.00
  82/09/22   2118  50943       SEPTMBRE   10,980.00     98,820.00     32,948.00
  83/02/14   1759  05129       FEVRIER    32,948.00    131,768.00          0.00

               MONTANT EN 'HOLBACK' ->  $        0.00
```

3.10.1

```
CONTRACT # : 6532                                 RESPONSIBILITY CENTRE :257120
CONTRACTOR :                  INTERA TECHNOLOGIES LTD
P.O.- AUDETTE                'ICE NAVIGATION WORKSTATION    '     STATUS : ACTIVE
-------------------------------------------------------------------------------
REQUISITION NO. 5-5530          R&D ACTIVITY:  9728    TDC FILE NO.:1460-228
A-I-P DATE: 85/07/16        START DATE :85/09/20  FINAL REPORT DELIVERY: 87/10/27
CONTRACT | PAID CY-2: 163,113.98    FUT. YRS:        0.00  TOT $ AUTH: 277,000.00
   TERMS | PAID CY-1: 113,768.72    BGT CY+1:        0.00    SPONSOR : TRNS
         | BGT  CY  :      117.30   EST.$ CY:        0.00    PRINTED :[87/11/09]
-------------------------------------------------------------------------------
 TRNS DATE  REF.#  VOUCHER      MONTH         AMOUNT    PAID TO DATE  NOT YET PAID
 ---------- -----  ----------   -----     ----------    ------------  ------------
   85/09/30  7067  DEBUT        SEPTMBRE  247,000.00            0.00    247,000.00
   85/11/26  7318  51215        NOVEMBRE   37,159.97       37,159.97    209,840.03
   85/11/26  7320  51215        NOVEMBRE   27,288.84       64,448.81    182,551.19
   86/01/07  7608  AMEND        DECEMBRE   30,000.00       64,448.81    212,551.19
   86/01/15  7378  51501        JANVIER    27,156.93       91,605.74    185,394.26
   86/04/15  7937  52094        13 EME     27,910.68      119,516.42    157,483.58
   86/04/15  7970  52094        13 EME     10,870.74      130,387.16    146,612.84
   86/04/15  7986  52094        13 EME      3,391.10      133,778.26    143,221.74
   86/04/15  7990  52094        13 EME     14,909.07      148,687.33    128,312.67
   86/05/02  8370  50193        14 EME     17,770.18      166,457.51    110,542.49
   86/10/22  9206  RECAP        14 EME     -3,343.53      163,113.98    113,886.02
   86/08/14  8719  50675        AOUT       31,979.48      195,093.46     81,906.54
   86/08/14  8717  50675        AOUT       28,731.44      223,824.90     53,175.10
   86/09/17  8989  50800        SEPTMBRE   49,221.39      273,046.29      3,953.71
   86/10/22  9211  51044        OCTOBRE     3,836.41      276,882.70        117.30
                   MONTANT EN 'HOLDBACK' ->  $  25,861.96

   87/10/28 10548  HOLD         OCTOBRE    25,861.96
```

3.10.2

```
PROJET :  6352  E&H PROGRAM TIES :TRANSVISION   AUTH:   24,721.00
TIES # : TASK 1      DATS SCHEDULING SYSTEM        AUTH:         0.00
          BALANCE:         0.00
========================================================================
87/11/09 [09:27:32]                                              Pase 1
DATE TRN  INV/AMN#    AMOUNT
========  ==========  ===========
85/04/11  TASK 1-1       2,816.00
85/04/26  TASK 1-2       2,907.98
85/06/12  TASK 1-3       1,732.50
87/01/26  TASK 1-4      -7,456.48
                      ===========
                             0.00
 *** GRAND Total( 4 Rec.) ***
```

3.10.3

1.0

DATE :87/11/09
O.P. :AUDETTE

FORMULAIRE D'INSCRIPTION AVEC RETROACTION

(A REMPLIR EN MEME TEMPS QUE LA DEMANDE AU MAS POUR LA PASSATION D'UN MARCHE)

IDENTIFICATION

MEC #: M112 ORIGINE : ENDORSED DATE AEP : 85/07/16 CENTRE DE RSPB. : 257120

TITRE DU PROJET ICE NAVIGATION WORKSTATION

NUMERO DE DOSSIER 1460-228

FINANCEMENT (ESTIMATIF)

A MODIFIER SEULEMENT SI DIFFERENT PAR RAPPORT AU BORDEREAU D'ACHEMINEMENT DAP OU AU DERNIER COMPTE RENDU SIG

# PROJ	6627	6531	6532		
PARRAIN	CMTA-AM	TDC-O&M	TRNS		
$AC	0	0	0		
$AC+1	0	0	0		
$AF	0	0	0		
TOTAL $AUTO	92,833	30,325	277,000		

COUT TOTAL DU PROJET 400,158
(genere par l'ordinateur)

ORGANISME EXECUTANT

NOM INTERA TECHNOLOGIES LTD

|_| COCHER ICI S'IL Y A UN CHANGEMENT D'ADRESSE

INSCRIRE L'ADRESSE SEULEMENT S'IL S'AGIT D'UN NOUVEAU CONTRACTANT OU D'UN CHANGEMENT D'ADRESSE

ADRESSE (siege social) 1200-510 5TH STREET S. W.

VILLE, PROVINCE CALGARY,ALBERTA

CODE POSTAL T2P 3S2

AGENT DE LIAISON

NUMERO DE TELEPHONE

LANGUE DE TRAVAIL 0 |_| 1 - FRANCAIS 2 - ANGLAIS

SITUATION GEOGRAPHIQUE ALBERTA |_|_|

1 - TERRE-NEUVE
2 - ILE-DU-PRINCE-EDOUARD
3 - NOUVELLE-ECOSSE
4 - NOUVEAU-BRUNSWICK
5 - QUEBEC (HORS RCN)
6 - ONTARIO (HORS RCN)
7 - MANITOBA
8 - SASKATCHEWAN
9 - ALBERTA
10- COLOMBIE-BRITANNIQUE
11- YUKON/T.-N.-O.
12- RCN (QUEBEC)
13- RCN (ONTARIO)
14- ETRANGER

3.10.4

DATE :87/11/09
O.P. :AUDETTE

FORMULAIRE D'INSCRIPTION AVEC RETROACTION

TYPE D'ORGANISME |_|_| 8

1 - CDT
2 - AUTRE MINISTERE FEDERAL
3 - UNIVERSITE OU INSTITUT UNIVERSITAIRE
4 - AUTRE ORGANISME A BUT NON LUCRATIF
5 - INDUSTRIE CANADIENNE - CONSULTANT
6 - INDUSTRIE CANADIENNE - FABRICANT
7 - INDUSTRIE CANADIENNE - EXPLOITANT
8 - INDUSTRIE CANADIENNE - AUTRE
9 - ETRANGER
10- TRANSPORTS CANADA - AUTRE
11- MUNICIPALITE
12- PROVINCE

TYPE DE MARCHE

0 |_| 1 - DEPENSES CONTROLEES
2 - PRIX FIXE
3 - PRIX PLAFOND
4 - OFFRE PERMANENTE

CALENDRIER (provisoire)

85/09/20	87/10/19	87/10/27
__ / __ / __	__ / __ / __	__ / __ / __
DATE DEBUT	RECEPTION A-P	RECEPTION DEF.
aa / mm / jj	aa / mm / jj	aa / mm / jj

CLASSIFICATION SCIENTIFIQUE/TECHNOLOGIQUE

(exigee par Statistique Canada)

DONNER LE NUMERO APPROPRIE 24 |_|_|

RECHERCHE ET DEVELOPPEMENT EXPERIMENTAL
(ex. etude et mise au point d'un nouvel autocar)

Sciences naturelles		Sciences sociales
22	R&D INTERNE	23
24	CONTRAT DE R&D	25
26	CONTRAT DE SERVICE DE SOUTIEN	27
28	SUBVENTIONS ET CONTRIBUTIONS DE R&D	29
30	BOURSE DE RECHERCHE	31
32	ADMINISTRATION DES PROGRAMMES EXTRA-MUROS	33

ACTIVITES SCIENTIFIQUES CONNEXES
(ex. demonstration d'un nouvel autocar)

34	COLLECTE DE DONNEES SCIENTIFIQUES/GENERALES	35
36	SERVICES DE RENSEIGNEMENTS	37
38	ESSAIS ET NORMALISATION/ETUDES ECONOMIQUES ET DE FAISABILITE	39
40	ETUDES DE FAISABILITE/EVALUATION DES PROCEDURES ET POLITIQUES	41
42	AIDE A L'EDUCATION	43
44	ADMINISTRATION D'UN SERVICE DE SOUTIEN EXTRA-MUROS	45

3.0

DATE :87/11/09
O.P. :AUDETTE

FORMULAIRE D'INSCRIPTION AVEC RETROACTION

FINANCEMENT EXTERIEUR-PARTAGE DES FRAIS/CONTRIBUTIONS MATERIELLES

0 I_I 1 - NEANT I_I 2 - OUI
(Si OUI remplir le tableau ci-dessous)

ORGANISME	CONTRIBUTION TOTALE ESTIMATIVE	DESCRIPTION
I_I	0.00	
1 - INDUSTRIE	I_I_I_I_I_I_I_I_I_I_I_I	I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I
I_I	0.00	
2 - PROV/MUNICIPALITE	I_I_I_I_I_I_I_I_I_I_I_I	I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I
I_I	0.00	
3 - ETRANGER	I_I_I_I_I_I_I_I_I_I_I_I	I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I
I_I	0.00	
4 - AUTRE	I_I_I_I_I_I_I_I_I_I_I_I	I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I_I

VALEUR TOTALE DE LA PARTICIPATION 0.00 NOTE : SERA CALCULEE PAR L'ORDINATEUR.
AUX COUTS

valeur estimative des prets pluri-annuels de materiel/personnel, des autres contributions materielles, des couts absorbes, etc.

AVANTAGES ESCOMPTES

Indiquer les avantages escomptes de l'execution de ce projet.
CHOISIR UN MAXIMUM DE TROIS RUBRIQUES ET LES NUMEROTER PAR ORDRE D'IMPORTANCE.

1RE importance I_I_I 0 2E importance I_I_I 0 3E importance I_I_I 0

1 - SURETE ACCRUE	2 - DEVELOPPEMENT ECONOMIQUE REGIONAL
3 - SECURITE ACCRUE	4 - ACCESSIBILITE PA&H
5 - REDUCTION DES FRAIS D'EXPLOITATION	6 - NIVEAU DE SERVICE AMELIORE
7 - REDUCTION DES COUTS D'IMMOBILISATION	8 - POLLUTION/NUISANCES REDUITES
9 - REDUCTION DES FRAIS D'ENTRETIEN	10- ECONOMIE D'ENERGIE
11- PRODUCTIVITE/EFFICACITE ACCRUE	12- ENERGIE : TRANSPORT
13- ELABORATION D'UNE POLITIQUE	14- ENERGIE : CARBURANTS DE SUBSTITUTION/AUTRE
15- ELABORATION DE LIGNES DIRECTRICES OU DE NORMES	16- DEVELOPPEMENT DES CONNAISSANCES TECHNIQUES
17- ELABORATION DE REGLEMENTS	18- FACILITE D'APPROVISIONNEMENT

UTILISATEUR DES RESULTATS

Preciser le principal utilisateur des resultats, c'est-a-dire celui qui y donnera suite
(a noter que l'utilisateur des resultats n'est pas necessairement le principal beneficiaire ; ex. R&D PA&H)

COCHER UNE SEULE CASE I_I 0

1 - CDT	2 - INDUSTRIE CANADIENNE : EXPLOITANT OU TRANSPORTEUR
3 - TRANSPORTS CANADA(NON CDT)	4 - INDUSTRIE CANADIENNE : FABRICANT
5 - AUTRE MINISTERE FED.	6 - MUNICIPALITE
7 - PROVINCE	8 - AUTRE

DOMAINES D'APPLICATION (donnees requises par Statistique Canada)

Preciser le domaine d'application du projet

COCHER UNE SEULE CASE I_I_I 0

1 - TRANSPORT INTERURBAIN	2 - TRANSPORT URBAIN
3 - NORD	4 - REGIONS ELOIGNEES
5 - NATIONAL	6 - TRANSPORT REGIONAL
7 - INTERNATIONAL	8 - OCEANS
9 - ESPACE	10- AUTRE

DATE :87/11/09
O.P. :AUDETTE

FORMULAIRE D'INSCRIPTION AVEC RETROACTION

PRODUITS LIVRABLES

Cocher dans la liste ci-dessous les produits livrables a la fin du marche

0 0 0 0 0 0 0

|_| 1 - rapports |_| 2 - production audio-visuelle
|_| 3 - plan et dessins |_| 4 - logiciels/donnees informatiques
|_| 5 - equipement/materiel achete |_| 6 - prototype
|_| 7 - illustrations

NOTE: tous les produits acquis ou mis au point dans le cadre de ce marche appartiennent au CDT, a moins d'indication contraire dans les documents contractuels.

PUBLICATION

A. Nombre d'exemplaires requis du rapport principal
0 Anglais |_|_|_| 0 Francais |_|_|_| 0 Bilingue |_|_|_|

B. Nombre d'exemplaires requis du rapport interimaire:
sans objet |_| 0 Anglais |_|_|_| 0 Francais |_|_|_| 0 Bilingue |_|_|_|

C. Nombre d'exemplaires requis du rapport sommaire
sans objet |_| 0 Anglais |_|_|_| et 0 Francais |_|_|_| 0 Bilingue |_|_|_|

D. De plus, est-ce que le contractant va produire du materiel particulier (imprime ou audio-visuel) pour diffusion generale?
0 1 oui |_| 2 non |_|

E. Est-ce le contractant qui doit produire les RDF, les sommaires et les rapports dans l'autre langue officielle?
0 1 oui |_| 2 non |_|

F. En regard des questions A a D, le Service des Publications sera-t-il sollicite pour un des aspects de production enumerees ci-dessous:
0 1 oui |_| 2 non |_|

Si oui, cocher les cases appropriees:

0 0 0 0 0 0 0

|_| 1 - consultation
|_| 2 - conception graphique
|_| 3 - illustration (dessins techniques)
|_| 4 - traitement de texte
|_| 5 - revision et production dans l'autre langue
|_| 6 - impression
|_| 7 - coordination - commercialisation/vente

EXIGENCES LINGUISTIQUES

Rapport final: 0
|_| 1 - langue du contractant
|_| 2 - dans les deux langues officielles

Rapport interimaire (le cas echeant): 0
|_| 1 - langue du contractant
|_| 2 - dans les deux langues officielles

Justification pour publication dans la langue du contractant seulement:
- Distribution limitee, usage a court terme et demande dans l'autre langue 5% ou moins

Justification pour publication dans les deux langues:
- Distribution generale
- Usage a long terme
- Demande dans l'autre langue plus de 5%

APPENDIX A - SECTION 3.11

```
*** Liste des MENUS pour MIS ***
--------------------------------

                    MAJ
                    LISTE
```

```
                           AAA MENU pour MAJ              AAA
                           ----------------------------------

    1- INSERER une FACTURE                  2- INSERER la date recu (facture)
    3- MODIFIER une FACTURE                 4- INSERE une REQ/AGREEMENT
    5- MODIFIER une REQUISITION             6- VOIR REQUISITION ou ENTENTE
    7- VOIR une FACTURE                     8- CHERCHER une FACTURE
    9- CHERCHER une REQUISITION            10- FACTURE EN PREINVOICE
   11- INSERER la date recu (contrat)      12- CHERCHER UNE NUMERO DE REQUISI
   13- FAIRE LES LIENS AVEC CONTRAT        14- MODIFICATION DU # DE CONTROLE

Choisissez une fonction->
```

1 -
2 -
3 -
7 -
8 -
10 -

```
------------------------------------------------------------------------------
|                                                                            |
|                              FACTURE                                        |
|                              =======                                        |
|                                                                            |
|     DATE ENVOI        AGENT DE PROJET             NOM DU CONTRACTANT       |
|      87/11/04            N/A               SANS CONTRACTANT                |
|                                                                            |
|          ADMIN. REGIONAL          # PROJET        # REQUISITION            |
|                                     9999            7-7504                 |
|                                                                            |
|                          DATE DE LA                                        |
|      # FACTURE             FACTURE       CENTRE DE RESP.     # DOSSIER     |
|     1                     0                   N/A            N/A           |
|                                                                            |
|        INCLUANT                                                            |
|        HOLDBACK        DATE RECU            ORGANISME PARRAINANT           |
|             0.00       00/00/00       SANS 'ORGANISME PARRAINANT'          |
|                                                                            |
------------------------------------------------------------------------------
                                                          FF01-12/84
```

3.11.1

4 -
5 -
6 -
9 -
11 -

REQUISITION

# PROJET 9999	CNT RESP. N/A	# DOSSIER N/A	# REQUISITION 7-7504
TYPE DE REQ. MOD#1	NOM DE CONTRACTANT SANS CONTRACTANT		DSS OFFICE DSS-MTL
TITRE DE PROJET N/A		AGENT DE PROJET N/A	
DATE TELEX	ACC. RECP	DATE ENVOI	DATE RECU
MONTANT REQ.	ORGANISME PARRAINANT		COMMENTAIRES

QF01 12/84

3.11.2

```
Liste pour : REQN.#          : 7-7532
-------------------------------------------
PROJE
=====
 6934
 6935
 6936

Total ( 3 Rec.) Pour REQN.#          = 7-7532


 *** GRAND Total( 3 Rec.) ***
Donnez # REQUIS.  ->
```

3.11.3

APPENDIX A - SECTION 3.12

```
                       *** MENU pour LISTE          ***
                       ----------------------------------

   1- LISTE DES FACTURES en retard          2- LISTE REQUISITION POUR LE MOIS
   3- LISTE REQUISITION en retard           4- LISTE des ENTENTES
   5- LISTE des retards de TELEX            6- LISTER factures envoyees
   7- LISTER factures recues                8- LISTER requisitions envoyees
   9- LISTER contrats/ententes recus       10- FACTURE ENVOYE a DATE
  11- LISTE des FACTURES a ELIMINEES       12- REQUISITION A ELIMINEE
  13- LISTES DES CAPAEES                   14- LISTE DES TRANS. EN PREINVOICE

Choisissez une fonction->
```

```
87/11/04 [09:59:39]                                                                                              1 -
e 1
                                FOLLOW UP ON CLAIM(S) FOR PROGRESS PAYMENT

Liste pour : OFF PRJT        : AUDETTE
------------------------------------------------
RSPB C  #CONT  #FACTURE   DATE FAC     NOM CIE                         SPONS. ORG. NAME                ADMREG      ENVOI     REQN.#     FILE NO        INC.HOLD
======  =====  ========== ===========  =============================== =============================== =========== ========  ========== =============  ==========
257120  6782   9          87/05/06     INTERA TECHNOLOGIES LTD         TRANSPORT DEV. CENTRE           FAVREAU     87/05/19  5-5553     1460-209-2      25,261.73
257120  6574   9          87/05/06     INTERA TECHNOLOGIES LTD         CMTA                            FAVREAU     87/05/19  5-5553     1460-209-2       7,700.01
                                                                                                                                                     ==========
Total ( 2 Rec.) Pour OFF PRJT       = AUDETTE                                                                                                         32,961.74
```

3.12.1

```
87/11/04 [09:59:39]
                         FOLLOW UP ON CLAIM(S) FOR PROGRESS PAYMENT                                                  Pase 7

Liste pour : OFF PRJT          : N/A
------------------------------------------
RSPB C  #CONT  #FACTURE    DATE FAC     NOM CIE                           SPONS. ORG. NAME                ADMREG       ENVOI     REQN.#      FILE NO        INC.HOLD
======  =====  ==========  ===========  ==============================  ==============================  ===========  ========  ==========  =============  ==========
N/A     6559   5 DSS       86/06/12     UTDC INC.                       DSS                             CHAPAIS      86/07/02  7-7504      N/A             30,304.68
N/A     6559   6 DSS       86/09/24     UTDC INC.                       DSS                             CHAPAIS      87/01/26  7-7504      N/A             23,119.21
N/A     6559   7 DSS       86/11/12     UTDC INC.                       DSS                             CHAPAIS      87/01/26  7-7504      N/A             -72177.56
N/A     6559   8           86/11/17     UTDC INC.                       DSS                             CHAPAIS      87/01/26  7-7504      N/A             26,843.11
N/A     6736   6           0            SOLICITOR GENERAL OF CANADA     TRANSPORT DEV. CENTRE                        87/03/17  7-7504      N/A                  0.00
N/A     6584   61          87/10/31     THE ARNOTT DESING GROUP INC.    DSS                             MISENER      87/04/15  7-7504      N/A                127.44
N/A     6584   66          87/10/31     THE ARNOTT DESING GROUP INC.    DSS                             MISENER      87/04/15  7-7504      N/A                565.59
N/A     6584   90          87/02/28     THE ARNOTT DESING GROUP INC.    DSS                             MISENER      87/04/15  7-7504      N/A                440.32
                                                                                                                                                          ==========
Total ( 8 Rec.) Pour OFF PRJT      = N/A                                                                                                                   9,222.79


                                                                                                                                                          ==========
### GRAND Total( 18 Rec.) ###                                                                                                                             165,658.37
```

```
87/11/04 [10:03:05]

Liste pour : RSPB CNT          : 257110
-----------------------------------------

#CONT  FILE NO         REQN.#       TYPEREQ      NOM CIE                            SPONS. ORG. NAME                   PRJT TTL                            OFF PRJT     ACCRECP   ENVOI     RECU      TELEX
=====  ==============  ===========  ===========  =================================  =================================  ==================================  ===========  ========  ========  ========  ========
 6998  1455-197        7-7536       AGREEMEN                                        CATA                               ANALYSIS OF RUNWAY ROUGHNESS        DIBBLE       87/10/26  87/10/19  87/10/28  00/00/00
 6998  1455-197        7-7536       RFP                                             SANS 'ORGANISME PARRAINANT'        ANALYSIS OF RUNWAY ROUGHNESS        DIBBLE       00/00/00  87/10/19  00/00/00  00/00/00

Total ( 2 Rec.) Pour RSPB CNT          = 257110


Liste pour : RSPB CNT          : 257150
-----------------------------------------

#CONT  FILE NO         REQN.#       TYPEREQ      NOM CIE                            SPONS. ORG. NAME                   PRJT TTL                            OFF PRJT     ACCRECP   ENVOI     RECU      TELEX
=====  ==============  ===========  ===========  =================================  =================================  ==================================  ===========  ========  ========  ========  ========
 6783  1460-244        6-6540       MOD#1        VALMET ARCTIC CANADA LTD           TRANSPORT DEV. CENTRE              JARSVAAR PROP/ICE STUDY             BAYLY        00/00/00  87/10/14  87/10/20  00/00/00
 6964  1460-253        7-7534       NOUVEAU                                         TRANSPORT DEV. CENTRE              DEM ICE RESISTANCE SIMULATION       BAYLY        87/10/27  87/10/14  00/00/00  00/00/00
 6965  1460-253        7-7534       NOUVEAU                                         DSS                                DEM ICE RESISTANCE SIMULATION       BAYLY        00/00/00  87/10/14  00/00/00  00/00/00
 6953  1455-162-2      7-7518       NOUVEAU                                         TRANSPORT DEV. CENTRE              SMOKE MASK                          RICHARD      00/00/00  87/10/20  00/00/00  00/00/00
 6976  1460-254        7-7535       NOUVEAU      GEOTECHNICAL RESOURCES LTD         TRANSPORT DEV. CENTRE              ICE LOADS ON PROPELLER BLADES       SEMERY       00/00/00  87/10/27  00/00/00  00/00/00
 6985  1460-256        APP-I-PP     NOUVEAU      MELVILLE SHIPPING LTD              TRANSPORT DEV. CENTRE              ARCTIC SURVIVAL SLED                RICHARD      00/00/00  87/10/30  00/00/00  00/00/00

Total ( 6 Rec.) Pour RSPB CNT          = 257150


### GRAND Total( 8 Rec.) ###
```

3.12.2

FOLLOW UP ON REQUISITIONS

Liste pour : RSPB CNT : 257120
OFF PRJT : AUDETTE

#CONT	FILE NO	REQN.#	TYPEREQ	NOM CIE	PRJT TTL	ACCRECP	ENVOI	RECU	TELEX	MONTANT	STATUS	DSS OFF.
6918	1455-168-3	7-7514	RFP		AUTOMATED X-RAY SCREENING	00/00/00	87/06/12	00/00/00	00/00/00	0.00	NEGOTIAT	DSS-MTL
6609	1455-173-2	5-5570	MOD#2	BARRINGER RESEARCH LIMITED	INS DETECTION OF EXPLOSIVES	00/00/00	87/06/26	00/00/00	00/00/00	91,485.00	AMENDMNT	DSS-OTT
6944	1460-238-3	7-7521	NOUVEAU	INTERA TECHNOLOGIES LTD	SAR USE INTERACTIVE ASSISTANCE	87/08/10	87/07/30	00/00/00	00/00/00	354,000.00	NEGOTIAT	DSS-MTL
6969	1460-195-4	7-7528	NOUVEAU		SONAR RETRACTABLE TRANSDUCER	87/08/28	87/08/25	00/00/00	00/00/00	490,000.00	NEGOTIAT	DSS-MTL
6675	1465-475-1	6-6501	MOD#1	CTF SYSTEMS INC.	MAGLEV SC MAGNET CONST & TEST	87/09/02	87/08/28	00/00/00	00/00/00	350,000.00	PRE-AMEN	DSS-VANC

Total (5 Rec.) Pour OFF PRJT = AUDETTE 1285485.00

Total (5 Rec.) Pour RSPB CNT = 257120 1285485.00

3.12.3

FOLLOW UP ON REQUISITIONS

```
Liste pour : RSPB CNT        : 257140
             OFF PRJT        : SMITH B
--------------------------------------------
#CONT FILE NO        REQN.#     TYPEREQ    NOM CIE                          PRJT TTL                        ACCRECP  ENVOI    RECU     TELEX    MONTANT    STATUS     DSS OFF.
===== ============== ========== ========== ================================ =============================== ======== ======== ======== ======== ========== ========== ==========
 6722 1450-103-79    6-6514     MOD#1      TES LIMITED                      WHEELCHAIR SECUREMENT SYSTEM    00/00/00 87/07/07 00/00/00 00/00/00 158,555.00 /$LIBRE $/ DSS-MTL
 6967 1450-103-83    7-7526     RFP                                         SMALL AIRCRAFT ACCESSIBILITY    87/08/17 87/08/06 00/00/00 00/00/00  50,000.00 /$LIBRE $/ DSS-MTL
                                                                                                                                                    ==========
Total ( 2 Rec.) Pour OFF PRJT        = SMITH B                                                                                                      208,555.00

Liste pour : RSPB CNT        : 257140
             OFF PRJT        : SMITH T
--------------------------------------------
#CONT FILE NO        REQN.#     TYPEREQ    NOM CIE                          PRJT TTL                        ACCRECP  ENVOI    RECU     TELEX    MONTANT    STATUS     DSS OFF.
===== ============== ========== ========== ================================ =============================== ======== ======== ======== ======== ========== ========== ==========
 6902 1450-121-6     7-7500     RFP                                         TECHNICAL WRITING               87/05/04 87/04/24 00/00/00 00/00/00 130,000.00 /$LIBRE $/ DSS-MTL
 6902 1450-121-6     7-7500     NOUVEAU                                     TECHNICAL WRITING               00/00/00 87/05/11 00/00/00 00/00/00 130,000.00 /$LIBRE $/ DSS-MTL
                                                                                                                                                    ==========
Total ( 2 Rec.) Pour OFF PRJT        = SMITH T                                                                                                      260,000.00

Liste pour : RSPB CNT        : 257140
             OFF PRJT        : SUEN
--------------------------------------------
#CONT FILE NO        REQN.#     TYPEREQ    NOM CIE                          PRJT TTL                        ACCRECP  ENVOI    RECU     TELEX    MONTANT    STATUS     DSS OFF.
===== ============== ========== ========== ================================ =============================== ======== ======== ======== ======== ========== ========== ==========
 6914 1450-103-60-1  7-7512     RFP                                         TIES E&D PROGRAM                87/06/23 00/00/00 00/00/00 00/00/00 150,000.00 /$LIBRE $/ DSS-MTL
                                                                                                                                                    ==========
Total ( 1 Rec.) Pour OFF PRJT        = SUEN                                                                                                         150,000.00

Liste pour : RSPB CNT        : 257140
             OFF PRJT        : THERRIEN
--------------------------------------------
#CONT FILE NO        REQN.#     TYPEREQ    NOM CIE                          PRJT TTL                        ACCRECP  ENVOI    RECU     TELEX    MONTANT    STATUS     DSS OFF.
===== ============== ========== ========== ================================ =============================== ======== ======== ======== ======== ========== ========== ==========
 6921 1450-103-81    7-7510     RFP                                         COMMUNICATION POUR PA&H 87-88   87/06/15 87/06/09 00/00/00 00/00/00  30,000.00 /$LIBRE $/ DSS-MTL
                                                                                                                                                    ==========
Total ( 1 Rec.) Pour OFF PRJT        = THERRIEN                                                                                                      30,000.00
```

```
      e pou    PB CN       :
           OFF PRJT        : SMITH T
--------------------------------------------
#CONT FILE NO        REQN.#     TYPEREQ    NOM CIE                            PRJT TTL                        ACCRECP  ENVOI    RECU     TELEX    MONTANT    STATUS     DSS OFF.
===== ============== ========== ========== ================================== =============================== ======== ======== ======== ======== ========== ========== ==========
 6902 1450-121-6     7-7500     RFP                                           TECHNICAL WRITING               87/05/04 87/04/24 00/00/00 00/00/00 130,000.00 /$LIBRE $/ DSS-MTL
 6902 1450-121-6     7-7500     NOUVEAU                                       TECHNICAL WRITING               00/00/00 87/05/11 00/00/00 00/00/00 130,000.00 /$LIBRE $/ DSS-MTL
                                                                                                                                                  ==========
Total ( 2 Rec.) Pour OFF PRJT        = SMITH T                                                                                                    260,000.00


Liste pour : RSPB CNT        : 257140
           OFF PRJT        : SUEN
--------------------------------------------
#CONT FILE NO        REQN.#     TYPEREQ    NOM CIE                            PRJT TTL                        ACCRECP  ENVOI    RECU     TELEX    MONTANT    STATUS     DSS OFF.
===== ============== ========== ========== ================================== =============================== ======== ======== ======== ======== ========== ========== ==========
 6914 1450-103-60-1  7-7512     RFP                                           TIES E&D PROGRAM                87/06/23 00/00/00 00/00/00 00/00/00 150,000.00 /$LIBRE $/ DSS-MTL
                                                                                                                                                  ==========
Total ( 1 Rec.) Pour OFF PRJT        = SUEN                                                                                                       150,000.00


Liste pour : RSPB CNT        : 257140
           OFF PRJT        : THERRIEN
--------------------------------------------
#CONT FILE NO        REQN.#     TYPEREQ    NOM CIE                            PRJT TTL                        ACCRECP  ENVOI    RECU     TELEX    MONTANT    STATUS     DSS OFF.
===== ============== ========== ========== ================================== =============================== ======== ======== ======== ======== ========== ========== ==========
 6921 1450-103-81    7-7510     RFP                                           COMMUNICATION POUR PA&H 87-88   87/06/15 87/06/09 00/00/00 00/00/00  30,000.00 /$LIBRE $/ DSS-MTL
                                                                                                                                                  ==========
Total ( 1 Rec.) Pour OFF PRJT        = THERRIEN                                                                                                    30,000.00


                                                                                                                                                  ==========
Total ( 6 Rec.) Pour RSPB CNT        = 257140                                                                                                     648,555.00


                                                                                                                                                  ==========
### GRAND Total( 43 Rec.) ###                                                                                                                     3737712.00
```

3.12.4

4 -

```
87/11/04 [10:44:52]                                                                                        Page 1
                                        FOLLOW UP ON
                               AGREEMENTS/SERVICE CONTRACT
Liste pour : RSPB CNT        : 257150
----------------------------------------
#CONT FILE NO        NOM CIE                        SPONS. ORG. NAME               PRJT TTL                       ACCRECP  ENVOI    RECU     COMMENT
===== ============== ============================== ============================== ============================== ======== ======== ======== ==========================
 6843 1200-1                                        TRANSPORT DEV. CENTRE          CACTS 87                       00/00/00 87/08/27 00/00/00 SENT TO CASI

Total ( 1 Rec.) Pour RSPB CNT        = 257150
```

3.12.5

```
87/11/04 [10:44:52]                                                                                          Page
                                         FOLLOW UP ON
                                  AGREEMENTS/SERVICE CONTRACT

Liste pour : RSPB CNT         : 257120
----------------------------------------
#CONT  FILE NO       NOM CIE                         SPONS. ORG. NAME               PRJT TTL                        ACCRECP   ENVOI     RECU      COMMENT
=====  ============  ==============================  =============================  ==============================  ========  ========  ========  ===========================
 6796  1455-104      SPAR AEROSPACE LTD              AIRG                           CONVERTIBLE DME-DME/P STUDY     00/00/00  86/09/17  00/00/00  AIRG

Total ( 1 Rec.) Pour RSPB CNT         = 257120


 *** GRAND Total( 6 Rec.) ***
```

```
87/11/04 [11:19:12]
        Page 1
                                        FACTURE ENVOYEE A DATE

Liste pour : OFF PRJT         : DIBBLE
--------------------------------------------
RSPB C  #CONT  #FACTURE   DATE FAC   NOM CIE                          SPONS. ORG. NAME           ADMRES    ENVOI     REQN.#   FILE NO         INC.HOLD   STATUS
------  -----  ---------  ---------  -------------------------------  -------------------------  --------  --------  -------  --------------  ---------  --------
257110   6476  13         87/10/29   W.R. DAVIS ENGINEERING LIMITED   HEP-TB08                   CHAPAIS   87/10/29  5-5324   1465-382-9      14,678.69  ACTIVE
                                                                                                                                              =========
Total ( 1 Rec.) Pour OFF PRJT         = DIBBLE                                                                                                14,678.69


  pour : OFF PRJT         : NISHIZAKI
--------------------------------------------
RSPB C  #CONT  #FACTURE   DATE FAC   NOM CIE                          SPONS. ORG. NAME           ADMRES    ENVOI     REQN.#   FILE NO         INC.HOLD   STATUS
------  -----  ---------  ---------  -------------------------------  -------------------------  --------  --------  -------  --------------  ---------  --------
257110   6798  4          87/10/16   BOMBARDIER INC.                  HEP-L105                   CHAPAIS   87/10/29  6-6534   1465-372-2-4    17,253.65  ACTIVE
257110   6832  7          87/19/16   BOMBARDIER INC.                  HEP-L105                   CHAPAIS   87/10/29  6-6540   1465-500         5,536.90  ACTIVE
                                                                                                                                              =========
Total ( 2 Rec.) Pour OFF PRJT         = NISHIZAKI                                                                                             22,790.55


Liste pour : OFF PRJT         : ROWAN
--------------------------------------------
RSPB C  #CONT  #FACTURE   DATE FAC   NOM CIE                          SPONS. ORG. NAME           ADMRES    ENVOI     REQN.#   FILE NO         INC.HOLD   STATUS
------  -----  ---------  ---------  -------------------------------  -------------------------  --------  --------  -------  --------------  ---------  --------
257110   6719  13         87/09/30   W.R. DAVIS ENGINEERING LIMITED   TRANSPORT DEV. CENTRE      CHAPAIS   87/10/29  6-6515   1465-378-4       4,599.30  ACTIVE
                                                                                                                                              =========
Total ( 1 Rec.) Pour OFF PRJT         = ROWAN                                                                                                  4,599.30


Liste pour : OFF PRJT         : AUBETTE
--------------------------------------------
RSPB C  #CONT  #FACTURE   DATE FAC   NOM CIE                          SPONS. ORG. NAME           ADMRES    ENVOI     REQN.#   FILE NO         INC.HOLD   STATUS
------  -----  ---------  ---------  -------------------------------  -------------------------  --------  --------  -------  --------------  ---------  --------
257120   6782  9          87/05/06   INTERA TECHNOLOGIES LTD          TRANSPORT DEV. CENTRE      FAVREAU   87/05/19  5-5353   1460-209-2      25,261.73  ACTIVE
257120   6574  9          87/05/06   INTERA TECHNOLOGIES LTD          CRTA                       FAVREAU   87/05/19  5-5353   1460-209-2       7,700.01  ACTIVE
257120   6782  HOLDBACK   87/09/28   INTERA TECHNOLOGIES LTD          TRANSPORT DEV. CENTRE      FAVREAU   87/10/27  5-5353   1460-209-2      25,261.73  ACTIVE
257120   6574  HOLDBACK   87/09/28   INTERA TECHNOLOGIES LTD          CRTA                       FAVREAU   87/10/27  5-5353   1460-209-2       7,700.01  ACTIVE
257120   6877  4          87/09/30   OFFSHORE SYSTEMS LIMITED         DSS                        ROGERS    87/10/30  6-6560   1460-249        46,804.64  ACTIVE
257120   6675  12         87/10/08   CTF SYSTEMS INC.                 TRANSPORT DEV. CENTRE      ROGERS    87/10/30  6-6201   1465-475-1      10,876.36  PRE-AMEN
                                                                                                                                              =========
Total ( 6 Rec.) Pour OFF PRJT         = AUBETTE                                                                                              123,604.48
```

3.12.6

FACTURE ENVOYEE A DATE

```
Liste pour : OFF PRJT        : LAFRAMBOISE
----------------------------------------------------
RSPB C  NCONT  #FACTURE   DATE FAC    NOM CIE                         SPONS. ORG. NAME              ADMRES     ENVOI     REGN.#   FILE NO      INC.HOLD   STATUS
------  -----  ---------  ----------  ------------------------------  ----------------------------  ---------  --------  -------  -----------  ---------  ---------
257150   6801  7          87/08/31    ARCTEC NEWFOUNDLAND LIMITED     TRANSPORT DEV. CENTRE         NEIMS      87/10/20  6-6539   1460-245     22,520.53  ACTIVE
                                                                                                                                              ---------
Total ( 2 Rec.) Pour OFF PRJT        = LAFRAMBOISE                                                                                           42,492.17


Liste pour : OFF PRJT        : N/A
----------------------------------------------------
RSPB C  NCONT  #FACTURE   DATE FAC    NOM CIE                         SPONS. ORG. NAME              ADMRES     ENVOI     REGN.#   FILE NO      INC.HOLD   STATUS
------  -----  ---------  ----------  ------------------------------  ----------------------------  ---------  --------  -------  -----------  ---------  ---------
N/A      6559  5 DSS      86/06/12    UTDC INC.                       DSS                           CHAPAIS    86/07/02  7-7504   N/A          30,304.68  ACTIVE
N/A      6559  6 DSS      86/09/24    UTDC INC.                       DSS                           CHAPAIS    87/01/26  7-7504   N/A          23,119.21  ACTIVE
N/A      6559  7 DSS      86/11/12    UTDC INC.                       DSS                           CHAPAIS    87/01/26  7-7504   N/A          -72177.56  ACTIVE
N/A      6559  8          86/11/17    UTDC INC.                       DSS                           CHAPAIS    87/01/26  7-7504   N/A          26,043.11  ACTIVE
N/A      6736  6          0           SOLICITOR GENERAL OF CANADA     TRANSPORT DEV. CENTRE                    87/03/17  7-7504   N/A               0.00  ACTIVE
N/A      6584  61         87/10/31    THE ARNOTT DESING GROUP INC.    DSS                           AISEMER    87/04/15  7-7504   N/A             127.44  ACTIVE
N/A      6584  66         87/10/31    THE ARNOTT DESING GROUP INC.    DSS                           AISEMER    87/04/15  7-7504   N/A             565.59  ACTIVE
N/A      6584  90         87/02/28    THE ARNOTT DESING GROUP INC.    DSS                           AISEMER    87/04/15  7-7504   N/A             440.32  ACTIVE
N/A      9999  1          0           SANS CONTRACTANT                SANS "ORGANISME PARRAINANT"              87/11/04  7-7504   N/A               0.00  ACTIVE
                                                                                                                                              =========
Total ( 9 Rec.) Pour OFF PRJT        = N/A                                                                                                    9,222.79


                                                                                                                                              =========
*** GRAND Total( 39 Rec.) ***                                                                                                               493,579.26
```

-13

```
87/11/04 [11:44:52]                                                                    Page 1

Liste pour : RSPB CNT          : 257110
----------------------------------------
DATE TRN  .PROJ  AMOUNT       OFF PRJT     PRJT TTL                          INV/AMN#
========  =====  ===========  ===========  ================================  ==========
87/05/08   6026    10,676.56  NISHIZAKI    SPECS FOR THYSSEN-WAAS BOW        -
87/05/08   6749     1,660.31  ROWAN        TRACK STRUCTURE RESEARCH          1
                 ===========
                   12,336.87
Total ( 2 Rec.) Pour RSPB CNT           = 257110

Liste pour : RSPB CNT          : 257120
----------------------------------------
DATE TRN  .PROJ  AMOUNT       OFF PRJT     PRJT TTL                          INV/AMN#
========  =====  ===========  ===========  ================================  ==========
87/05/08   6166     6,824.63  MYERS        NACELLE AIRFLOW OPT.(SCOOP)       -
                 ===========
                    6,824.63
Total ( 1 Rec.) Pour RSPB CNT           = 257120

Liste pour : RSPB CNT          : 257130
----------------------------------------
DATE TRN  .PROJ  AMOUNT       OFF PRJT     PRJT TTL                          INV/AMN#
========  =====  ===========  ===========  ================================  ==========
87/05/08   6576    34,408.92  SABOUNGHI    FRP TANKER TESTING METHODOLOGY    -
                 ===========
                   34,408.92
Total ( 1 Rec.) Pour RSPB CNT           = 257130

Liste pour : RSPB CNT          : 257140
----------------------------------------
DATE TRN  .PROJ  AMOUNT       OFF PRJT     PRJT TTL                          INV/AMN#
========  =====  ===========  ===========  ================================  ==========
87/05/11   6827    30,000.00  SUEN         COMP SCHEDULG BROKERAGE, B.C.     -
                 ===========
                   30,000.00
Total ( 1 Rec.) Pour RSPB CNT           = 257140

Liste pour : RSPB CNT          : 257150
----------------------------------------
DATE TRN  .PROJ  AMOUNT       OFF PRJT     PRJT TTL                          INV/AMN#
========  =====  ===========  ===========  ================================  ==========
87/05/08   6640    16,004.43  BAYLY        SEGMENTED MODEL ICE TESTS II      -
                 ===========
                   16,004.43
Total ( 1 Rec.) Pour RSPB CNT           = 257150

                 ===========
                   99,574.85
### GRAND Total( 6 Rec.) ###
```

3.12.7

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87/11/04 [11:48:48]
Page 1

LISTE DES TRANSACTIONS EN PREINVOICE

DATE PRE	#CONT	OFF PRJT	#FACTURE	RSPB C	PRJT TTL	NOM CIE	SPONS. ORG. NAME	MONTANT	CSPONSOR	STATUS
87/06/05	6561	VESPA	6	257130	UTDC/MCI RAILBUS DEVELOPMENT	UTDC INC.	TRANSPORT DEV. CENTRE	30,304.68	TDC-O&M	PRE-AMEN
87/08/21	6837	BIBBLE	-	257110	DANGEROUS GOODS ACCIDENT MODEL	W.R. DAVIS ENGINEERING LIMITED	T.C. TRANSP. OF DANGEROUS GOOD	-3,801.23	TCS	ACTIVE
87/08/21	6869	AMMI	-	257120	KB SYSTEM FOR EM INTERFERENCE	COMPENGSERV LTD.	CATA	-11851.17	TCAV	ACTIVE
87/08/21	6656	MORGAN	-	257140	SRI BATTERIES/MATERIALS STUDY	SRI INTERNATIONAL	DRPD	-9,500.00	ADMPC	ACTIVE
87/08/24	6716	SMITH B	2	257140	IN-FLIGHT WHEELCHAIR STORAGE	W.R. DAVIS ENGINEERING LIMITED	TP80-E&M	8,474.00	TDPP-E&M	ACTIVE
87/09/24	6566	ROMAN	6	257110	LOW FRICTION SNOW PLOW EVAL.	QUEEN'S UNIVERSITY - CIGGT	TRANSPORT DEV. CENTRE	1,920.29	TDC-O&M	ACTIVE
87/09/25	6923	SIMON	-	257100	TDPP-E&M 1987-88		ACDB	-67384.00	TDPP-E&M	ACTIVE
87/09/25	6922	SIMON	-	257100	R&D ENERGY 1987-88		ACDB	-106972.00	TRNS	ACTIVE
87/10/13	6949	SEVERY	1	257150	ICE BLOCKAGE OF SHROUDED PROPS	ARCTIC RESEARCH & DEVELOPMENT	DSS	30,000.00	DSS	ACTIVE
87/10/14	6819	MORGAN	404525	257140	INTEGRATED TRAFFIC SYSTEM	IBI GROUP	ONTARIO MOT COMMUNICATIONS	-5,413.92	PROV/MUN	ACTIVE
87/10/14	6731	VERSAILLES	-	257120	ALS FRANGIBILITY STUDY	ANDREW ANTENNA CO. LTD.	ALSP	-12902.00	TCAV	ACTIVE
87/10/16	6788	MARSHALL	10	257130	LOW COST WEIGH-IN-MOTION SCALE	INTERNATIONAL ROAD DYNAMICS	DSS	1,074.19	DSS	ACTIVE
87/10/21	6593	SABOURANI	22	257130	HEAVY VEHICLE FUEL CONSUMPTION	FOREST ENG.RESEARCH INSTITUTE	HEP-CONS	1,792.94	CONS	ACTIVE
87/10/22	6908	MORGAN	2	257140	COMMUNIC-AID II	GUTENBERG DESIGN INC.	TP80-E&M	4,453.66	TDPP-E&M	ACTIVE
87/10/23	6910	GORE	1	257110	THE ICEBREAKER - PHASE II	MELVILLE SHIPPING LTD	TRANSPORT DEV. CENTRE	22,498.00	TDC-O&M	ACTIVE
87/10/25	6495	SABOURANI	24	257130	CO2 REFRIGERATION	FRIDEV-CONCOOL	HEP-CONS	11,985.89	CONS	ACTIVE
87/10/25	6740	POSLUNS	25	257120	"SIMARS"-MARINE NAVIGATION SYS	OFFSHORE SYSTEMS LIMITED	DSS	13,934.78	DSS	ACTIVE
87/10/27	6729	VERSAILLES	116234	257120	ALS FRANGIBILITY STUDY	ANDREW ANTENNA CO. LTD.	TRANSPORT DEV. CENTRE	24,450.00	TDC-O&M	ACTIVE
87/10/27	6820	MORGAN	9	257140	INTEGRATED TRAFFIC SYSTEM	IBI GROUP	HEP-CONS	5,923.99	CONS	ACTIVE
								-61011.90		

*** GRAND Total(19 Rec.) ***

3,12,8

APPENDIX A - SECTION 3.13

```
                      *** MENU pour USAGERS         ***
                      ---------------------------------

  1- PROJECT PROFILE SHEET              2- TRANSACTIONS FOR CONTRACT(S)
  3- LIST FOR A SPECIFIC SPONSOR        4- PROJECT LISTING BY CONTRACTOR
  5- GENERAL INFO. VIA FILE #           6- LIST OF YOUR CONTRACTORS
  7- PROPOSED PROJECTS LISTINGS         8- PRINT MIS PROJECT ENTRY FORM
  9- BRIDGE FUNDING CONTRACT COMM.     10- LIST OF YOUR PROJECTS
 11- FINANCIAL STATUS OF CONTRACTS     12- REFER TO PREVIOUS FISCAL YEAR

Choisissez une fonction->
```

```
                          TRANSPORT CANADA
                TRANSPORTATION DEVELOPMENT CENTRE
                      PROJECT PROFILE SHEET

                                                         PRINTED 87/09/14
.--------------------------------------------------------------------------.
| PROJECT TITLE : TDC COMP SYSTEM EVALUATION  |          REMARKS           |
| PROJECT VALUE :    59,675.00                |          -------           |
| PERFORMER : DIGI-PLUS INC.                  |- CONTRACTOR STARTED WORK   |
| PROJECT OFFICER : POSLUNS                   |AUG. 24/87.                 |
| DSS OFFICE       : DSS-MTL                  |-PROPOSED TABLE OF CONTENTS,|
| RSPB CENTRE      : 257100                   |PROJECT PLAN, GANTT CHART TO|
| FILE # : 1683-15                            |BE PREPARED BY SEPT. 01/87. |
| REQ #  : 6-6543                             |-EDTDC INTERVIEW SCHEDULED  |
| PROJECT STATUS : ACTIVE                     |FOR SEP. 02/87, BCI SEP.03/87|
| AIP DATE       : 86/03/06                   |OTHERS FOLLOWING WEEK.      |
| SIGN DATE      : 87/09/01                   |                            |
| DRAFT REPORT : 88/01/01                     |                            |
| FINAL REPORT : 88/02/15                     |                            |
|--------------------------------------------------------------------------|
|                          MODAL SUBOBJECTIVE                              |
|   5120                   ------------------                              |
|   MANAGEMENT INFORMATION AND CONTROL                                     |
|                                                                          |
|   TO DEVELOP AND MAINTAIN A COMPUTERIZED MANAGEMENT INFORMATION SYSTEM   |
|   WHICH WILL FACILITATE TIMELY AND ACCURATE MONITORING, REPORTING AND    |
|   FINANCIAL CONTROL OF TDC'S R&D PROGRAM.  TO REVIEW MIS SYSTEM AND      |
|   FUTURE DEVELOPMENT OPTIONS.  TO UPDATE THE TDC PROCEDURES MANUAL.      |
|--------------------------------------------------------------------------|
|                          PROJECT OBJECTIVE                               |
|                          =================                               |
|   TO PROVIDE SERVICES NECESSARY FOR THE INVESTIGATION, EVALUATION,      |
|   ANALYSIS AND RECOMMENDATIONS FOR IMPROVEMENTS OF TDC'S EXISTING        |
|   COMPUTER SYSTEM.                                                       |
|                                                                          |
|                                                                          |
|                                                                          |
|--------------------------------------------------------------------------|
|                               SCOPE                                      |
|                               =====                                      |
|   PROVIDE THE SERVICES OF COMPUTER SYSTEM SPECIALISTS FOR THE PURPOSES   |
|   OF EVALUATION AND ANALYSIS OF TDC'S COMPUTERIZED MANAGEMENT            |
|   INFORMATION SYSTEM (MIS).                                              |
|   A COMPREHENSIVE STUDY TO BE UNDERTAKEN WILL INCLUDE A COMPLETE         |
|   EVALUATION OF EXISTING PROCEDURES AND OPERATIONS, AN IN-DEPTH          |
|   ANALYSIS OF USER REQUIREMENTS, AND RECOMMENDATIONS FOR THE IMPLEMENTA- |
|   TION OF AN UP-TO-DATE MIS RESPONDING TO CURRENT TDC COMPUTER NEEDS.    |
|   THIS PHASE OF THE WORK IS INTENDED TO SERVE AS THE FIRST STAGE OF AN   |
|   OVERALL IMPLEMENTATION PLAN, WHICH WILL LEAD INTO A DETAILED SPECI-    |
|   FICATION STAGE, AND WILL CULMINATE IN SYSTEM ANALYSIS AND PROGRAM      |
|   CODING FOR AN UP-TO-DATE MIS INSTALLATION.                             |
|--------------------------------------------------------------------------|
|PROJ.#|  SPONSOR  |PREV. YEARS| EST $ CY  |EST $ CY+1 | EST $ FY  |TOT $ AUTH.|
|--------------------------------------------------------------------------|
| 6672 | TDC-O&M   |       0.00| 59,675.00|       0.00|       0.00| 59,675.00|
|--------------------------------------------------------------------------|
```

3.13.1

```
PROJECT NO : 6740
CONTRAC    :                                       RESPONSIBILITY CENTRE :257120
P.O.- PO LUNS                  OFFSHORE SYSTEMS LIMITED
                              ''SINADS'-MARINE NAVIGATION SYS'    STATUS :ACTIVE
--------------------------------------------------------------------------------
REQUISITION NO. 6-6526      (            )       FILES NO:1460-240
A-I-P- DATE: 86/07/03  EFFECTIVE START:86/11/07  FINAL REPORT DELIVERY: 88/08/31
CONTRACT | PAID CY-2:          0.00   FUT. YRS:        0.00  TOT $ AUTH: 388,092.00
   TERMS | PAID CY-1: 173,352.76   BGT CY+1:        0.00     SPONSOR : DSS
         | BGT   CY  : 214,739.24   BGT CY+2:        0.00    PRINTED  [ 87/09/14]
--------------------------------------------------------------------------------
87/09/14 [14:22:43]
                                                                         Page 1
DATE TRN  REF.#  TYPE   MONTH          AMOUNT       TO DATE      BALANCE    MONTH/BILL
========  =====  =====  ==========  ===========  ===========  ===========  ==========
86/11/18   9381  DEBUT  NOVEMBRE     388,092.00         0.00   388,092.00  OCTOBRE
87/02/06   9539  05114  FEVRIER       15,005.17    15,005.17   373,086.83  NOVEMBRE
87/02/20   9652  05124  FEVRIER       22,866.50    37,871.67   350,220.33  DECEMBRE
87/03/11   9723  05140  MARS          19,341.45    57,213.12   330,878.88  JANVIER
87/04/09   9924  05162  13 EME         7,167.06    64,380.18   323,711.82  FEVRIER
87/05/14  10023  05184  14 EME         2,406.76    66,786.94   321,305.06  MARS
87/05/19  10218  J.V.   14 EME        32,614.29    99,401.23   288,690.77  MARS
87/06/03   4257  JV     14 EME        43,403.51   142,804.74   245,287.26  MARS
87/06/03   4258  JV     14 EME         3,174.00   145,978.74   242,113.26  MARS
87/06/03   4309  JV     14 EME         3,584.25   149,562.99   238,529.01  MARS
87/06/03   4342  JV     14 EME        17,863.77   167,426.76   220,665.24  MARS
87/06/03   4356  JV     14 EME         5,626.00   173,052.76   215,039.24  MARS
87/06/03   4357  JV     14 EME           300.00   173,352.76   214,739.24  MARS
87/08/11  10085  5022   AOUT          28,456.99   201,809.75   186,282.25  JUIN
87/08/11  10086  5022   AOUT          13,125.00   214,934.75   173,157.25  JUIN
87/08/20  10315  XXXXX  AOUT          29,987.79   244,922.54   143,169.46  JUILLET
87/08/20  10316  XXXXX  AOUT          13,125.00   258,047.54   130,044.46  JUILLET
87/08/26   6437  05027  AOUT           3,953.00   262,000.54   126,091.46  MAI
87/08/26   6480  05027  AOUT           6,820.71   268,821.25   119,270.75  MAI
87/08/26   6519  05027  AOUT           2,250.00   271,071.25   117,020.75  MAI
87/08/26   6526  05027  AOUT          27,393.94   298,465.19    89,626.81  MAI
87/08/26  10247  05027  AOUT          16,675.75   315,140.94    72,951.06  AVRIL

              LE MONTANT EN 'HOLDBACK' -> $        0.00
```

3.13.2

```
87/11/05 [10:14:22]
                                                                                              Page 1
Liste pour : CSPONSOR          : ERDA/QUE
             RSPB CNT          : 257120
----------------------------------------
PROJE  PRJT TTL                          TOT$AUTH     PREV YRS     TOT$INCR     ACT $ CY     EST $ CY     BGT $ CY     OFF PRJT
=====  ================================  ===========  ===========  ===========  ===========  ===========  ===========  ===========
 6647  ETUDE CHEMINS DE FER COTE-NORD     222,478.00   173,416.44   209,100.71    31,667.61    49,061.56    49,061.56  VERSAILLES
 6775  BOGIE MECANO-SOUDE                1035,000.00    37,337.13   150,000.00    29,909.23   277,662.87   277,662.87  VERSAILLES
 6854  CAISSE DE METRO GRAND GABARIT      889,000.00    11,619.15    55,000.00    20,729.31   452,380.00   452,380.00  VERSAILLES
                                         ===========  ===========  ===========  ===========  ===========  ===========
Total ( 3 Rec.) Pour RSPB CNT            2146,478.00   222,372.72   414,100.71    82,306.15   779,104.43   779,104.43
                                         = 257120

Liste pour : CSPONSOR          : ERDA/QUE
             RSPB CNT          : 257130
----------------------------------------
PROJE  PRJT TTL                          TOT$AUTH     PREV YRS     TOT$INCR     ACT $ CY     EST $ CY     BGT $ CY     OFF PRJT
=====  ================================  ===========  ===========  ===========  ===========  ===========  ===========  ===========
 6661  GESTION CIRCULATION-METROP/DEC     180,500.00    71,723.08    99,795.82    26,269.86   108,776.92   108,776.92  WHITEHEAD
 6728  DEMO AUTOCAR ARTIC - PHASE I        50,863.82    40,143.77    41,219.05     1,075.28     1,075.28    10,720.05  MARSHALL
 6942  DEMO AUTOCAR ARTIC - PHASE II     2449,000.00         0.00         0.00         0.00   736,000.00   736,000.00  MARSHALL
                                         ===========  ===========  ===========  ===========  ===========  ===========
Total ( 3 Rec.) Pour RSPB CNT            2680,363.82   111,866.85   141,014.87    27,345.14   845,852.20   855,496.97
                                         = 257130

                                         ===========  ===========  ===========  ===========  ===========  ===========
Total ( 6 Rec.) Pour CSPONSOR            4826,841.82   334,239.57   555,115.58   109,651.29  1624,956.63  1634,601.40
                                         = ERDA/QUE

                                         ===========  ===========  ===========  ===========  ===========  ===========
 *** GRAND Total( 6 Rec.) ***            4826,841.82   334,239.57   555,115.58   109,651.29  1624,956.63  1634,601.40
```

3.13.3

```
                                           DIGI-PLUS INC.                                                                 AS OF 87/09/14
OFF PRJT     PRJT TTL                          P-TOTAL AUTH  P-ACT $ CY    SUSPENSE      PEND INV      FINALDEL  SPONS  SPONSOR CO
===========  ==============================  ============  ============  ===========  ===========   ========  =====  ==========
POSLUNS      TDC COMP SYSTEM EVALUATION          59,675.00          0.00         0.00         0.00  88/02/15   6672  TDC-03M
                                             ============  ============  ===========  ===========
                                                 59,675.00          0.00         0.00         0.00
 $$$ GRAND Total( 1 Rec.) $$$
```

3.13.4

```
87/11/05 [10:21:05]
                                                        Page 1

Liste pour : FILE NO          : 1460-156-3
-----------------------------------------------
PROJE  OFF PRJT     PRJT TTL                          STATUS
=====  ===========  ==============================  ==========
 6003  BAYLY        PROPELLER/ICE FE MODEL PHASE 2  ACTIVE
 6004  BAYLY        PROPELLER/ICE FE MODEL PHASE 2  ACTIVE
 6005  BAYLY        PROPELLER/ICE FE MODEL PHASE 2  ACTIVE

Total ( 3 Rec.) Pour FILE NO          = 1460-156-3


 $$$ GRAND Total( 3 Rec.) $$$
```

3.13.5

```
87/11/05 [10:22:40]                                          Page 1

Liste pour : OFF PRJT          : POSLUNS
-----------------------------------------------
PROJE  NOM CIE                          ORG - NSI   FILE NO         STATUS
=====  ==============================  ==========  ==============  ==========
 6839                                         101  1460-240        ACTIVE
 6995                                         101  1455-189-1      APP-I-PP
 6996                                         101  1455-189-1      APP-I-PP
 6997                                         101  1455-189-1      APP-I-PP
 6418  ARCTIC SCIENCES LIMITED                554  1460-224        CMPLETED
 6419  ARCTIC SCIENCES LIMITED                554  1460-224        CMPLETED
 6672  DIGI-PLUS INC.                         104  1683-15         ACTIVE
 6713  DTI TELECOM INC.                       285  1450-152        ACTIVE
 6956  KOM INC.                               107  1455-194        NEGOTIAT
 6957  KOM INC.                               107  1455-194        NEGOTIAT
 6958  KOM INC.                               107  1455-194        NEGOTIAT
 6959  KOM INC.                               107  1455-194        NEGOTIAT
 6859  LEIGH INSTRUMENTS LIMITED              118  1455-189        ACTIVE
 6860  LEIGH INSTRUMENTS LIMITED              118  1455-189        ACTIVE
 6861  LEIGH INSTRUMENTS LIMITED              118  1455-189        NEGOTIAT
 6791  MacDONALD DETTWILER & ASS. LTD         157  1455-186        ACTIVE
 6920  MacDONALD DETTWILER & ASS. LTD         157  1455-186        ACTIVE
 6793  MacDONALD DETTWILER & ASS. LTD         157  1455-186        ACTIVE
 6742  OFFSHORE SYSTEMS LIMITED               239  1460-240        ACTIVE
 6739  OFFSHORE SYSTEMS LIMITED               239  1460-240        ACTIVE
 6740  OFFSHORE SYSTEMS LIMITED               239  1460-240        ACTIVE
 6741  OFFSHORE SYSTEMS LIMITED               239  1460-240        ACTIVE
 6874  SNC INC.                               374  1450-152        NEGOTIAT
 6792  SPAR AEROSPACE LTD                     245  1455-186        ACTIVE

Total ( 24 Rec.) Pour OFF PRJT          = POSLUNS


### GRAND Total( 24 Rec.) ###
```

3.13.6

CURRENT TECHNOLOGY

PROPOSED PROJECTS

P.O. DIBBLE

DESCRIPTION / STATUS	MODE	PROBABLE CONTRACTORS	EST $ COST	P.J.	EDTDC COMMENTS
ASSESSMENT OF THERMAL RESPONSE OF 'EMPTY' TANK CARS USING THERMAL MODEL IDENTIFIED AS A RESULT OF REQUEST BY RTC. -IDENTIFIED IN OPS PLAN. REF. # -> 182	R	DAVIS/QUEEN'S	30,000	06/87 10/87	PRIORITY #2
RAIL TURNOVER STUDIES: INFORMAL REQUEST MADE BY CTC-RESEARCH TO USE TRAIN DYNAMICS SIMULATOR TO STUDY TRAIN DERAILMENTS. REF. # -> 70	R	DSL-DYN. SCIENCES	50,000	10/86 12/86 04/87 12/87	PRIORITY #2. ENSURE CTC/RTC ENDORSEMENT. DEFINITION.
EXPERIMENTAL THERMAL TANK MODELLING: UNB/QUEEN'S PARTICIPATION IN INTERNATIONAL EXPERIMENTAL AND MODELLING EXERCISE WITH FIRE TESTS TO BE CONDUCTED AT HSE (ENGLAND). REF. # -> 260	R	UNB	20,000	12/87	
LASER IMAGE SENSING FOR RAIL HEAD MEASUREMENT: MEETING HELD WITH CP OCTOBER 8, FORMAL PROPOSAL TO BE SUBMITTED. REF. # -> 261	R	CP RAIL	200,000	11/87	
TRANSPORTATION OF COAL STUDY: FUNDING AND ENDORSEMENT RECEIVED FROM PERD 2.2 COMMITTEE (COAL & TRANSPORTATION). MEETINGS TO BE HELD WITH COAL ASSOCIATION, EMR, ALCAN, ETC., TO DISCUSS PROJECT. REF. # -> 218	R	RFP	200,000	09/87 12/87	PRIORITY #1 DEFINE AND IMPLEMENT PROJECT IN ACCORDANCE WITH ENERGY FUND COMMITMENTS IF PRACTICAL.
NEW STEELS FOR RAIL TANK CARS: SUPPORTED BY DANGEROUS GOODS GROUP. (S. KAPLAN). REF. # -> 262	R	WELDING INST.CANADA	0	MMM/YY	

```
                                                                              1.0
                                                                DATE :87/11/06
                                                                D.P. :LAFRAMBOISE
        *FORMULAIRE D'INSCRIPTION AVEC RETROACTION*

                        (A REMPLIR EN MEME TEMPS QUE LA DEMANDE AU MAS POUR LA PASSATION D'UN MARCHE)
IDENTIFICATION

MEC #: M333           ORIGINE : HO TSK/EHD          DATE AEP : 84/08/01          CENTRE DE RSPB. : 257150

TITRE DU PROJET                                                    NUMERO DE DOSSIER
                 BARGE DIRECTIONAL STABILITY                         1460-237
|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|    |_|_|_|_|_|_|_|_|_|_|_|_|_|

FINANCEMENT (ESTIMATIF)
                 A MODIFIER SEULEMENT SI DIFFERENT PAR RAPPORT AU BORDEREAU D'ACHEMINEMENT DAP OU AU DERNIER COMPTE RENDU SIG
# PROJ     6763
      |_|_|_|_|_|           |_|_|_|_|_|           |_|_|_|_|_|           |_|_|_|_|_|           |_|_|_|_|_|

PARRAIN      TDC-O&M
        |_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|

$AC            66,505
    |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|

$AC+1               0
    |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|

$AF                 0
    |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|

TOTAL
$AUTO         90,900
    |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|
                                                              COUT TOTAL DU PROJET          90,900
                                                              (genere par l'ordinateur)
ORGANISME EXECUTANT

NOM              ROBERT ALLAN LTD.,                                       |_| COCHER ICI S'IL Y A UN
          |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|          CHANGEMENT D'ADRESSE

INSCRIRE L'ADRESSE SEULEMENT     ADRESSE (siege social)  500-1380 BURRARD STREET
S'IL S'AGIT D'UN NOUVEAU CONTRACTANT                     |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
OU D'UN CHANGEMENT D'ADRESSE                              1496 WEST 72ND AVE.,
                                                         |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
                                 VILLE, PROVINCE         VANCOUVER, B.C.
                                                         |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
                                 CODE POSTAL             V6Z 2H3
                                                         |_|_|_|_|_|_|_|
AGENT DE LIAISON          ROBERT ALLAN
                          |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
NUMERO DE TELEPHONE       604-687-9102
                          |_|_|_|_|_|_|_|_|_|_|_|_|
LANGUE DE TRAVAIL     2           |_|     1 - FRANCAIS   2 - ANGLAIS


SITUATION GEOGRAPHIQUE     B.C.        |_|_|

     1 - TERRE-NEUVE       2 - ILE-DU-PRINCE-EDOUARD   3 - NOUVELLE-ECOSSE   4 - NOUVEAU-BRUNSWICK
     5 - QUEBEC (HORS RCN) 6 - ONTARIO (HORS RCN)      7 - MANITOBA          8 - SASKATCHEWAN
```

3.13.8

2.0
DATE :87/11/06
O.P. :LAFRAMBOISE

FORMULAIRE D'INSCRIPTION AVEC RETROACTION

TYPE D'ORGANISME |_|_| 5

1 - CDT	2 - AUTRE MINISTERE FEDERAL
3 - UNIVERSITE OU INSTITUT UNIVERSITAIRE	4 - AUTRE ORGANISME A BUT NON LUCRATIF
5 - INDUSTRIE CANADIENNE - CONSULTANT	6 - INDUSTRIE CANADIENNE - FABRICANT
7 - INDUSTRIE CANADIENNE - EXPLOITANT	8 - INDUSTRIE CANADIENNE - AUTRE
9 - ETRANGER	10- TRANSPORTS CANADA - AUTRE
11- MUNICIPALITE	12- PROVINCE

TYPE DE MARCHE

3 |_|

1 - DEPENSES CONTROLEES	2 - PRIX FIXE
3 - PRIX PLAFOND	4 - OFFRE PERMANENTE

CALENDRIER (provisoire)

86/10/16	00/00/00	87/12/31
__ / __ / __	__ / __ / __	__ / __ / __
DATE DEBUT	RECEPTION A-P	RECEPTION DEF.
aa / mm / jj	aa / mm / jj	aa / mm / jj

CLASSIFICATION SCIENTIFIQUE/TECHNOLOGIQUE
(exigee par Statistique Canada)

DONNER LE NUMERO APPROPRIE 24 |_|_|

RECHERCHE ET DEVELOPPEMENT EXPERIMENTAL
(ex. etude et mise au point d'un nouvel autocar)

Sciences naturelles		Sciences sociales
22	R&D INTERNE	23
24	CONTRAT DE R&D	25
26	CONTRAT DE SERVICE DE SOUTIEN	27
28	SUBVENTIONS ET CONTRIBUTIONS DE R&D	29
30	BOURSE DE RECHERCHE	31
32	ADMINISTRATION DES PROGRAMMES EXTRA-MUROS	33

ACTIVITES SCIENTIFIQUES CONNEXES
(ex. demonstration d'un nouvel autocar)

34	COLLECTE DE DONNEES SCIENTIFIQUES/GENERALES	35
36	SERVICES DE RENSEIGNEMENTS	37
38	ESSAIS ET NORMALISATION/ETUDES ECONOMIQUES ET DE FAISABILITE	39
40	ETUDES DE FAISABILITE/EVALUATION DES PROCEDURES ET POLITIQUES	41
42	AIDE A L'EDUCATION	43
44	ADMINISTRATION D'UN SERVICE DE SOUTIEN EXTRA-MUROS	45

DATE :87/11/06
O.P. :LAFRAMBOISE

FORMULAIRE D'INSCRIPTION AVEC RETROACTION

FINANCEMENT EXTERIEUR-PARTAGE DES FRAIS/CONTRIBUTIONS MATERIELLES

1 |_| 1 - NEANT |_| 2 - OUI
(Si OUI remplir le tableau ci-dessous)

```
ORGANISME              CONTRIBUTION TOTALE ESTIMATIVE                  DESCRIPTION
|_|                              0.00
 1 - INDUSTRIE           |_|_|_|_|_|_|_|_|_|_|_|_|      |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
|_|                              0.00
 2 - PROV/MUNICIPALITE   |_|_|_|_|_|_|_|_|_|_|_|_|      |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
|_|                              0.00
 3 - ETRANGER            |_|_|_|_|_|_|_|_|_|_|_|_|      |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
|_|                              0.00
 4 - AUTRE               |_|_|_|_|_|_|_|_|_|_|_|_|      |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
```

VALEUR TOTALE DE LA PARTICIPATION AUX COUTS 0.00 NOTE : SERA CALCULEE PAR L'ORDINATEUR.

valeur estimative des prets pluri-annuels de materiel/personnel, des autres contributions materielles, des couts absorbes, etc.

AVANTAGES ESCOMPTES

Indiquer les avantages escomptes de l'execution de ce projet.
CHOISIR UN MAXIMUM DE TROIS RUBRIQUES ET LES NUMEROTER PAR ORDRE D'IMPORTANCE.

1RE importance |_|_| 1 2E importance |_|_| 11 3E importance |_|_| 16

1 - SURETE ACCRUE
2 - DEVELOPPEMENT ECONOMIQUE REGIONAL
3 - SECURITE ACCRUE
4 - ACCESSIBILITE PA&H
5 - REDUCTION DES FRAIS D'EXPLOITATION
6 - NIVEAU DE SERVICE AMELIORE
7 - REDUCTION DES COUTS D'IMMOBILISATION
8 - POLLUTION/NUISANCES REDUITES
9 - REDUCTION DES FRAIS D'ENTRETIEN
10- ECONOMIE D'ENERGIE
11- PRODUCTIVITE/EFFICACITE ACCRUE
12- ENERGIE : TRANSPORT
13- ELABORATION D'UNE POLITIQUE
14- ENERGIE : CARBURANTS DE SUBSTITUTION/AUTRE
15- ELABORATION DE LIGNES DIRECTRICES OU DE NORMES
16- DEVELOPPEMENT DES CONNAISSANCES TECHNIQUES
17- ELABORATION DE REGLEMENTS
18- FACILITE D'APPROVISIONNEMENT

UTILISATEUR DES RESULTATS

Preciser le principal utilisateur des resultats, c'est-a-dire celui qui y donnera suite
(a noter que l'utilisateur des resultats n'est pas necessairement le principal beneficiaire : ex. R&D PA&H)

COCHER UNE SEULE CASE |_| 2

1 - CDT
2 - INDUSTRIE CANADIENNE : EXPLOITANT OU TRANSPORTEUR
3 - TRANSPORTS CANADA(NON CDT)
4 - INDUSTRIE CANADIENNE : FABRICANT
5 - AUTRE MINISTERE FED.
6 - MUNICIPALITE
7 - PROVINCE
8 - AUTRE

DOMAINES D'APPLICATION (donnees requises par Statistique Canada)

Preciser le domaine d'application du projet

COCHER UNE SEULE CASE |_|_| 8

1 - TRANSPORT INTERURBAIN
2 - TRANSPORT URBAIN
3 - NORD
4 - REGIONS ELOIGNEES
5 - NATIONAL
6 - TRANSPORT REGIONAL

4.0

DATE :87/11/06
O.P. :LAFRAMBOISE

FORMULAIRE D'INSCRIPTION AVEC RETROACTION

PRODUITS LIVRABLES

Cocher dans la liste ci-dessous les produits livrables a la fin du marche

1 5 0 0 0 0 0

|_| 1 - rapports |_| 2 - production audio-visuelle
|_| 3 - plan et dessins |_| 4 - logiciels/donnees informatiques
|_| 5 - equipement/materiel achete |_| 6 - prototype
|_| 7 - illustrations

NOTE: tous les produits acquis ou mis au point dans le cadre de ce
marche appartiennent au CDT, a moins d'indication contraire dans les documents contractuels.

PUBLICATION

A. Nombre d'exemplaires requis du rapport principal
25 Anglais |_|_|_| 0 Francais |_|_|_| 0 Bilingue |_|_|_|

B. Nombre d'exemplaires requis du rapport interimaire:
sans objet |_| 0 Anglais |_|_|_| 0 Francais |_|_|_| 0 Bilingue |_|_|_|

C. Nombre d'exemplaires requis du rapport sommaire
sans objet |_| 40 Anglais |_|_|_| et 10 Francais |_|_|_| 0 Bilingue |_|_|_|

D. De plus, est-ce que le contractant va produire du materiel particulier (imprime ou audio-visuel) pour diffusion generale?
2 1 oui |_| 2 non |_|

E. Est-ce le contractant qui doit produire les RDF, les sommaires et les rapports dans l'autre langue officielle?
2 1 oui |_| 2 non |_|

F. En regard des questions A a D, le Service des Publications sera-t-il sollicite pour un des aspects de production enumerees ci-dessous:
1 1 oui |_| 2 non |_|

Si oui, cocher les cases appropriees:

5 0 0 0 0 0 0

|_| 1 - consultation
|_| 2 - conception graphique
|_| 3 - illustration (dessins techniques)
|_| 4 - traitement de texte
|_| 5 - revision et production dans l'autre langue
|_| 6 - impression
|_| 7 - coordination - commercialisation/vente

EXIGENCES LINGUISTIQUES

Rapport final: 1
|_| 1 - langue du contractant
|_| 2 - dans les deux langues officielles
Rapport interimaire (le cas echeant): 2
|_| 1 - langue du contractant
|_| 2 - dans les deux langues officielles

Justification pour publication dans la langue du contractant seulement:
- Distribution limitee, usage a court terme et demande dans l'autre langue 5% ou moins

Justification pour publication dans les deux langues:
- Distribution generale
- Usage a long terme
- Demande dans l'autre langue plus de 5%

```
                                                                                 1.0
                                                                        DATE :87/11/06
                                                                        P.O. :POSLUNS
                                  *DATA ENTRY FEEDBACK FORM*

                              (TO BE COMPLETED WITH DSS REQUISITION FOR CONTRACT)
IDENTIFICATION

MEC #: S120          ORIGIN : NO TSA/END          AIP DATE : 86/03/06          RESPONSIBILITY CNTR : 257100

PROJECT TITLE                                                    CENTRAL REGISTRY FILE NUMBER
                 TDC COMP SYSTEM EVALUATION                             1683-15
|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|    |_|_|_|_|_|_|_|_|_|_|_|_|_|

SOURCE OF FUNDS (ESTIMATED)
              TO BE MODIFIED ONLY IF THERE IS A CHANGE FROM AIP ROUTING SLIP OR THE LATEST MIS STATUS REPORT
PROJ #    6672
     |_|_|_|_|_|        |_|_|_|_|_|        |_|_|_|_|_|        |_|_|_|_|_|        |_|_|_|_|_|

SPONSOR      TDC-01M
        |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|

$CY          59,675
    |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|

$CY+1              0
    |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|

$FY                0
    |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|

TOTAL
$AUTH        59,675
    |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|  |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
                                                                TOTAL PROJECT VALUE          59,675
                                                                (Computer generated)
PERFORMING ORGANIZATION

NAME            DIGI-PLUS INC.                                       |_|  CHECK HERE IF THERE IS
       |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|        A CHANGE OF ADDRESS

ENTER ADDRESS INFO ONLY IF    ADDRESS (head office)   4 PLACE DU COMMERCE,BUREAU 400
THIS IS A NEW CONTRACTOR                              |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
OR CHANGE OF ADDRESS                                  ILE DES SOEURS
                                                      |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
                              CITY,PROVINCE           VERDUN, QUEBEC
                                                      |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
                              POSTAL CODE             H3E 1J4
                                                      |_|_|_|_|_|_|_|

CONTACT PERSON           MR. MACCLURE
                         |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
CONTACT'S PHONE #        514-769-4521
                         |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
CONTRACTORS'S WORKING     2          |_|     1 - FRENCH   2 - ENGLISH
LANGUAGE

CONTRACTOR LOCATION      QUEBEC      |_|_|

     1 - NEWFOUNDLAND       2 - PRINCE EDWARD ISLAND   3 - NOVA SCOTIA      4 - NEW BRUNSWICK
     5 - QUEBEC (NON-NCR)   6 - ONTARIO (NON-NCR)      7 - MANITOBA         8 - SASKATCHEWAN
     9 - ALBERTA           10- BRITISH COLUMBIA       11- YUKON/NWT        12- NCR (QUEBEC)
```

3.13.9

2.0

DATE :87/11/06
P.O. :POSLUNS

DATA ENTRY FEEDBACK FORM

CONTRACTOR
ORGANIZATION
TYPE |_|_| 5

1 - TDC   2 - OTHER FED.GOV'T DEPARTMENT
3 - UNIVERSITY OR UNIVERSITY INSTITUTE   4 - OTHER NON PROFIT-INSTITUTE
5 - CDN INDUSTRY CONSULTANT   6 - CDN INDUSTRY MANUFACTURER
7 - CDN INDUSTRY OPERATOR   8 - CDN INDUSTRY-OTHER
9 - FOREIGN   10- OTHER TRANSPORT CANADA
11- MUNICIPALITY   12- PROVINCE

TYPE OF CONTRACT

2 |_| 1 - LIMITATION OF EXPENDITURE   2 - FIXED PRICE
3 - CEILING PRICE   4 - STANDING OFFER

SCHEDULE (estimated)

87/09/01	88/01/01	88/02/15
__ / __ / __	__ / __ / __	__ / __ / __
START DATE	DRAFT DUE	FINAL DEL. DATE
yy / mm / dd	yy / mm / dd	yy / mm / dd

SCIENTIFIC/TECHNOLOGICAL CLASSIFICATION

(required by Statistic Canada)

ENTER THE APPROPRIATE NUMBER   26 |_|_|

RESEARCH AND EXPERIMENTAL DEVELOPMENT
(eg. design and development of new bus)

Natural Science		Social Science
22	IN-HOUSE R&D	23
24	R&D CONTRACTS	25
26	SUPPORTING CONTRACT	27
28	R&D GRANTS & CONTRIBUTIONS	29
30	RESEARCH FELLOWSHIPS	31
32	ADMINISTRATION OF EXTERNAL PROGRAM	33

RELATED SCIENTIFIC ACTIVITIES
(eg.demonstration of a new bus)

34	SCIENTIFIC/GENERAL PURPOSE DATA COLLECTION	35
36	INFORMATION SERVICES	37
38	TESTING & STANDARDIZATION/ECONOMIC & FEASIBILITY STUDIES	39
40	FEASIBILITY STUDIES/OPERATIONS & POLICY STUDIES	41
42	EDUCATION SUPPORT	43
44	ADMINISTRATION OF EXTERNAL SUPPORT	45

3.0
DATE :87/11/06
P.O. :POSLUNS

DATA ENTRY FEEDBACK FORM

EXTERNAL COST SHARING/CONTRIBUTION IN KIND

1 |_| 1 - NONE |_| 2 - YES
(If YES fill in the following table)

```
ORGANIZATION        TOTAL ESTIMATED CONTRIBUTION                    DESCRIPTION
|_|                            0.00
 1 - INDUSTRY       |_|_|_|_|_|_|_|_|_|_|_|_|_|_|     |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
|_|                            0.00
 2 - PROV/MUNICIPAL |_|_|_|_|_|_|_|_|_|_|_|_|_|_|     |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
|_|                            0.00
 3 - FOREIGN        |_|_|_|_|_|_|_|_|_|_|_|_|_|_|     |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
|_|                            0.00
 4 - OTHER          |_|_|_|_|_|_|_|_|_|_|_|_|_|_|     |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
```

TOTAL VALUE OF COST SHARING 0.00 NOTE: TOTAL VALUE TO BE CALCULATED BY THE COMPUTER
CONTRIBUTIONS

estimated multi-year value of equipment/personnel lent to project, other contributions in-kind, absorbed cost, etc.

AREA OF BENEFIT

Please indicate the transportation benefit expected from this project?
CHOOSE UP TO THREE AND PRIORITIZE IN THE APPROPRIATE BOXES.

1ST priority |_|_| 6 2ND priority |_|_| 11 3RD priority |_|_| 5

1 - IMPROVED SAFETY	2 - REGIONAL ECONOMIC DEVELOPMENT
3 - IMPROVED SECURITY	4 - E&H ACCESSIBILITY
5 - REDUCED OPERATION COSTS	6 - IMPROVED SERVICE
7 - REDUCED CAPITAL COSTS	8 - REDUCED ADVERSE ENVIRONMENTAL IMPACTS
9 - REDUCED MAINTENANCE COSTS	10- ENERGY CONSERVATION
11- IMPROVED PRODUCTIVITY/EFFICIENCY	12- ENERGY:TRANSPORTATION OF ENERGY
13- DEVELOPMENT OF POLICY	14- ENERGY:ALTERNATIVE FUEL/OTHER
15- DEVELOPMENT OF GUIDELINE OR STANDARDS	16- IMPROVED TECHNOLOGY BASE
17- DEVELOPMENT OF REGULATIONS	18- IMPROVED PROCUREMENT

USER OF RESULTS

Who is the principal user of the results; that is, who will take action on the project results?
(Please note that the user of the results is not necessarily the prime beneficiary, e.g. E&H R&D)

CHOOSE ONE NUMBER |_| 1

1 - TDC	2 - CANADIAN INDUSTRY:OPERATOR OR CARRIER
3 - TRANSPORT CANADA(NON-TDC)	4 - CANADIAN INDUSTRY:MANUFACTURER
5 - OTHER FED. GOV'T DEPT	6 - MUNICIPALITY
7 - PROVINCE	8 - OTHER

AREA OF IMPACT (required by Statistic Canada)

Please identify the area of impact of this project

CHOOSE ONE NUMBER |_|_| 5

1 - INTERCITY	2 - INTRACITY
3 - NORTHERN	4 - REMOTE
5 - NATIONAL	6 - REGIONAL
- INTERNATIONAL	- OCEANS

4.0

DATE :87/11/06
P.O. :POSLUNS

DATA ENTRY FEEDBACK FORM

PROJECT DELIVERABLES

A. Please check those items that are deliverables at the end of this contract
1 0 0 0 0 0 0
|_| 1 - reports |_| 2 - audio/visual material
|_| 3 - design drawings |_| 4 - computer software/data
|_| 5 - purchased equipment/mater. |_| 6 - prototype equipment
|_| 7 - artwork
NOTE: All such items acquired or developed under this contract belong to TDC unless otherwise agreed to in the contract.

PUBLICATION REQUIREMENTS

A. Number of copies of final report to be published
25 English |_|_|_| 0 French |_|_|_| 0 Bilingual |_|_|_|

B. Number of copies of interim report to be published
Not applicable |_| 0 English |_|_|_| 0 French |_|_|_| 0 Bilingual |_|_|_|

C. Number of copies of summary report to be published
Not applicable |_| 0 English |_|_|_| and 0 French |_|_|_| 0 Bilingual |_|_|_|

D. In addition to the above, will the contractor also be producing special printed or audio-visual material for wide distribution?
2 1 yes |_| 2 no |_|

E. Is the contractor responsible for translating/producing RDFs, summaries and/or reports in the other official language
0 1 yes |_| 2 no |_|

F. With respect to items A to D, will the services of TDC Publications be required in any of the areas listed below:
1 1 yes |_| 2 no |_|

If yes, check the appropriate boxes:
5 0 0 0 0 0 0
|_| 1 - consultation
|_| 2 - graphic design
|_| 3 - illustrations (eg. technical drawings)
|_| 4 - text processing
|_| 5 - editing & producing in other language
|_| 6 - printing
|_| 7 - sales/marketing coordination

LANGUAGE REQUIREMENTS

Final report: 1
|_| 1 - contractor's working language
|_| 2 - both official languages
Interim report (if applicable): 1
|_| 1 - contractor's working language
|_| 2 - both official languages

Reason for publication in contractor's working language only:
- Limited distribution, short-term usage, and demand in other language is 5% or less.

Reason for publication in both languages:
- General distribution
- Long-term usage
- Demand in other language is more than 5%

```
87/11/05 [15:02:42]                                                                   Page 1

Liste pour : RSPB CNT          : 257100
---------------------------------------
PROJE  PRJT TTL                           TOT$AUTH     ACT$CY-1     ACT $ CY     BGT $ CY    STATUS
=====  ================================  ===========  ===========  ===========  ===========  ==========
 6924  DSS BRIDGE 1987-88                -2140789.58         0.00   -489935.85  -2140789.58  ACTIVE
                                         ===========  ===========  ===========  ===========
                                         -2140789.58         0.00   -489935.85  -2140789.58
Total ( 1 Rec.) Pour RSPB CNT           = 257100

Liste pour : RSPB CNT          : 257110
---------------------------------------
PROJE  PRJT TTL                           TOT$AUTH     ACT$CY-1     ACT $ CY     BGT $ CY    STATUS
=====  ================================  ===========  ===========  ===========  ===========  ==========
 6315  LOCOMOTIVE FUEL SAVING SYSTEM      126,373.39         0.00         0.00         0.00  ACTIVE
 6477  TANK EXPLOSION SUPPRESSION          38,098.45         0.00         0.00         0.00  ACTIVE
 6584  ATC WORK STATION PROTOTYPE         400,000.00   234,244.28         0.00     6,384.22  PRE-AMEN
 6635  ADDED MASS-SHIP ICE IMPACT         141,000.00   141,000.00         0.00         0.00  ACTIVE
 6670  SHIP TRANSITING RIDGES              50,000.00    50,000.00         0.00         0.00  ACTIVE
 6702  AUTOMOBILE DRIVING SIMULATOR       215,000.00    93,438.48    59,902.15   121,561.52  ACTIVE
 6710  ICE-HULL FRICTION COEFFICIENT       67,000.00    67,000.00         0.00         0.00  ACTIVE
 6720  XING SIGNAL CONSPICUITY EXPTS       43,806.00    43,806.00         0.00         0.00  ACTIVE
 6808  HIGHWAY SNOW DRIFT CONTROL          92,500.00    30,000.00    16,539.29    62,500.00  ACTIVE
 6852  RAIL GRINDING MACHINE STUDY         25,000.00    25,000.00         0.00         0.00  ACTIVE
 6935  ARCTIC STRUCTURES CORROSION         70,000.00         0.00         0.00    70,000.00  NEGOTIAT
 6941  WHEEL CRACK DETECTION SYSTEM        90,000.00         0.00         0.00    70,000.00  NEGOTIAT
                                         ===========  ===========  ===========  ===========
                                         1358,777.84   684,488.76    76,441.44   330,445.74
Total ( 12 Rec.) Pour RSPB CNT          = 257110

Liste pour : RSPB CNT          : 257120
---------------------------------------
PROJE  PRJT TTL                           TOT$AUTH     ACT$CY-1     ACT $ CY     BGT $ CY    STATUS
=====  ================================  ===========  ===========  ===========  ===========  ==========
 6298  FIBRE OPTICS MARINE SYSTEM         190,076.44         0.00         0.00         0.00  ACTIVE
```

3.13.10

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87/11/05 [15:02:42]                                                                         Page 3

Liste pour : RSPB CNT           : 257140
------------------------------------------
PROJE  PRJT TTL                           TOT$AUTH     ACT$CY-1     ACT $ CY     BGT $ CY     STATUS
=====  ================================  ===========  ===========  ===========  ===========  ==========
 6284  AL/AIR BATTERY FOR VEHICLES        109,728.00         0.00         0.00         0.00  ACTIVE
 6294  TERMINAL COM SYS: SEN/SPCH          99,977.93         0.00         0.00         0.00  ACTIVE
 6361  LIGHTWEIGHT BATTERY WHEELCHAIR     102,620.00         0.00         0.00         0.00  ACTIVE
 6400  INT. TRANSPTN. COMM. SYSTEM        350,000.00         0.00         0.00         0.00  CMPLETED
 6620  COQUILLE DE VOYAGE                  55,277.00    55,277.00         0.00         0.00  ACTIVE
                                         ===========  ===========  ===========  ===========
                                          717,602.93    55,277.00         0.00         0.00
Total ( 5 Rec.) Pour RSPB CNT            = 257140

Liste pour : RSPB CNT           : 257150
------------------------------------------
PROJE  PRJT TTL                           TOT$AUTH     ACT$CY-1     ACT $ CY     BGT $ CY     STATUS
=====  ================================  ===========  ===========  ===========  ===========  ==========
 6456  SWATH FEASIBILITY STUDY             35,000.00         0.00         0.00         0.00  ACTIVE
 6863  ICE GROOVING TOOL FOR ICEBR.        15,000.00    15,000.00         0.00         0.00  ACTIVE
 6905  ICE NAVIGATION SIMULATOR(ARTEC      40,000.00         0.00         0.00    40,000.00  ACTIVE
 6949  ICE BLOCKAGE OF SHROUDED PROPS      67,000.00         0.00         0.00    67,000.00  ACTIVE
 6965  DEM ICE RESISTANCE SIMULATION       50,000.00         0.00         0.00    50,000.00  NEGOTIAT
 6972  ICEBREAKER MID-BODY RESISTANCE      50,000.00         0.00         0.00    50,000.00  NEGOTIAT
 6977  ICE LOADS ON PROPELLER BLADES      110,000.00         0.00         0.00         0.00  TERMINAT
 6986  ARCTIC SURVIVAL SLED                25,000.00         0.00         0.00         0.00  APP-I-PP
 7001  RIDGE MODELLING                     50,000.00         0.00         0.00         0.00  APP-I-PP
                                         ===========  ===========  ===========  ===========
                                          442,000.00    15,000.00         0.00   207,000.00
Total ( 9 Rec.) Pour RSPB CNT            = 257150

                                         ===========  ===========  ===========  ===========
                                         4266,358.43  1144,514.51         0.00    20,000.00
 *** GRAND Total( 49 Rec.) ***
```

```
Liste pour : OFF PRJT        : POSLUNS
----------------------------------------------
PROJE PRJT TTL                          STATUS     FILE NO        M.E. CSPONSOR    TOT$AUTH      EST $ CY     EST$CY+1      EST$FY
===== ============================== ========== ============== ==== ========== ============ ============ ============ ============
 6740 'SINADS'-MARINE NAVIGATION SYS ACTIVE     1460-240       M332 DSS          388,092.00   214,739.24         0.00         0.00
 6742 'SINADS'-MARINE NAVIGATION SYS ACTIVE     1460-240       M332 TCM          -62,000.00   -62,000.00         0.00         0.00
 6739 'SINADS'-MARINE NAVIGATION SYS ACTIVE     1460-240       M332 TRNS         200,000.00   147,000.00    53,000.00         0.00
 6839 'SINADS'-MARINE NAVIGATION SYS ACTIVE     1460-240       M332 OTHER DEPT   -40,000.00   -40,000.00         0.00         0.00
 6741 'SINADS'-MARINE NAVIGATION SYS ACTIVE     1460-240       M332 TDC-EXT      102,000.00   102,000.00         0.00         0.00
 6713 COMM/COMP/ELEC(TIES)  DTI      ACTIVE     1450-152       A801 TDC-O&M      170,000.00    40,000.00   130,000.00         0.00
 6874 COMM/COMP/ELEC(TIES) SNC INC.  NEGOTIAT   1450-152       A801 TDC-O&M      130,000.00         0.00         0.00         0.00
 6956 DIGITAL VOICE AND DATA LOGGER  NEGOTIAT   1455-194       A300 TDC-O&M       75,000.00    10,000.00    65,000.00         0.00
 6958 DIGITAL VOICE AND DATA LOGGER  NEGOTIAT   1455-194       A300 DSS          123,000.00   123,000.00         0.00         0.00
 6957 DIGITAL VOICE AND DATA LOGGER  NEGOTIAT   1455-194       A300 TCAV         -75,000.00         0.00   -75,000.00         0.00
 6959 DIGITAL VOICE AND DATA LOGGER  NEGOTIAT   1455-194       A300 TDC-EXT       75,000.00         0.00    75,000.00         0.00
 6859 ELT FEASIBILITY STUDY          ACTIVE     1455-189       A130 TDC-O&M       39,944.00    39,944.00         0.00         0.00
 6861 ELT FEASIBILITY STUDY          NEGOTIAT   1455-189       A130 TCAV         -40,000.00   -40,000.00         0.00         0.00
 6860 ELT FEASIBILITY STUDY          ACTIVE     1455-189       A130 TDC-EXT       40,000.00    40,000.00         0.00         0.00
 6995 ELT FIELD TRIALS               APP-I-PP   1455-189-1     A130 TDC-O&M      110,000.00    44,000.00    40,000.00    26,000.00
 6996 ELT FIELD TRIALS               APP-I-PP   1455-189-1     A130 TCAV         -189800.00         0.00   -169600.00   -20,200.00
 6997 ELT FIELD TRIALS               APP-I-PP   1455-189-1     A130 TDC-EXT      189,800.00         0.00   169,600.00    20,200.00
 6418 IN-AIR ACOUSTIC DETECT.(SODAR) CMPLETED   1460-224       M222 TDC-O&M       65,000.00         0.00         0.00         0.00
 6419 IN-AIR ACOUSTIC DETECT.(SODAR) CMPLETED   1460-224       M222 DSS          105,000.00         0.00         0.00         0.00
 6672 TDC COMP SYSTEM EVALUATION     ACTIVE     1683-15        S120 TDC-O&M       59,675.00    59,675.00         0.00         0.00
 6793 WIND SHEAR STUDY               ACTIVE     1455-186       A340 TCAV         -85,000.00   -85,000.00         0.00         0.00
 6792 WIND SHEAR STUDY-SPAR          ACTIVE     1455-186       A340 TDC-EXT       67,588.00    45,000.00    22,588.00         0.00
 6791 WIND-SHEAR STUDY-MACDETTWILER  ACTIVE     1455-186       A340 TDC-O&M       41,302.00    20,000.00    21,302.00         0.00
 6920 WIND-SHEAR STUDY-MACDETTWILER  ACTIVE     1455-186       A340 TDC-EXT       17,412.00    17,412.00         0.00         0.00
                                                                                ============ ============ ============ ============
                                                                                1507,013.00   675,770.24   331,890.00    26,000.00
Total ( 24 Rec.) Pour OFF PRJT         = POSLUNS

                                                                                ============ ============ ============ ============
                                                                                1507,013.00   675,770.24   331,890.00    26,000.00

 *** GRAND Total( 24 Rec.) ***
```

3.13.11

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Liste pour : PROJECT        : 6672
             OFF PRJT       : POSLUNS
---------------------------------------------
RSPB C  FILE NO        PRJT TTL                          STATUS       TOT$AUTH     TOT $ACT     ACT $ CY     SUSPENSE
======  =============  ================================  ==========   ===========  ===========  ===========  ===========
257100  1683-15        TDC COMP SYSTEM EVALUATION        ACTIVE         59,675.00         0.00         0.00         0.00
                                                                      ===========  ===========  ===========  ===========
Total ( 1 Rec.) Pour OFF PRJT        = POSLUNS                          59,675.00         0.00         0.00         0.00


                                                                      ===========  ===========  ===========  ===========
Total ( 1 Rec.) Pour PROJECT         = 6672                             59,675.00         0.00         0.00         0.00


                                                                      ===========  ===========  ===========  ===========
 *** GRAND Total( 1 Rec.) ***                                           59,675.00         0.00         0.00         0.00
```

3.13.12

APPENDIX A - SECTION 3.14

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                         AAA MENU pour $COORDNT        AAA
                         ----------------------------------

 ✓1- LISTE 'SECIFIC PROJECT INFO.'       ✓2- 3 YEAR MODAL PLAN
  3- CREE UN 'PLANNED PROJECT'             4- MODIFY & LINK PROJECTS
  5- CREE UN 'SPONSOR PLAN'                6- MODIFIER UN 'SPONSOR PLAN'
 ✓7- LISTE 'GENERAL PROGRAM INFO.'        ✓8- LISTE 'GENERAL & SPECIFIC' RPT
  9- TO DELETE A PLANNED PROJECT          10- TO TRANSFER  9999 TO CONTRACT#
✓11- COORD.COMP.C TO I CONS&LIOU         ✓12- COORD.COMP.CONS&LIOU PLANS
 13- CONS & LIOU PROJECTS BY P.O.         14- 2y modal proj. plan
 15- E&H STATUS REPORT

Choisissez une fonction->
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1-

OPT 1

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                                   SPECIFIC PROJECT INFORMATION
                                   ============================

                                   PROGRAM :       SPONSOR I.D   : INTERCITY BUS        1.5.2.01
                                   SPONSOR NUMBER:
                                   AIP  FUNDS CY BY SPONSOR :  200,000.00
                                   AUTH. FUNDS CY BY SPONSOR:  200,000.00
TITLE:COMMUNICATION POUR PAIH 87-88
------------------------------------------------------------------------------------------------------------------
TDC # | STATUS |  EST $ CY    EST $ CY+1  EST $ FY   | TOT $ AUTH| TOT $ INCR| ACT. $ CY | PROJ. OFF | REMARKES  87/10/16
------------------------------------------------------------------------------------------------------------------
 6921 |NEGOTIAT|   8,000.00  15,000.00   7,000.00   |  30,000.00|       0.00|       0.00|THERRIEN  |EVALUATION FAITE LE 25-09-87.
                                                                                                 |LE DEBUT DU CONTRAT DEVRAIT
                                                                                                 |ETRE LE 5-10-87.
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
TITLE:DEV.PROTOTYPE AIRCRAFT COUNTER
------------------------------------------------------------------------------------------------------------------
TDC # | STATUS |  EST $ CY    EST $ CY+1  EST $ FY   | TOT $ AUTH| TOT $ INCR| ACT. $ CY | PROJ. OFF | REMARKES  86/08/11
------------------------------------------------------------------------------------------------------------------
 6735 |PRE-AMEN. -44,000.00       0.00       0.00   | -100000.00|       0.00|       0.00|AVNI      |DESIGN PHASE COMPLETED.
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
TITLE:ICE PROT. SHAFT DYNAMIC
------------------------------------------------------------------------------------------------------------------
TDC # | STATUS |  EST $ CY    EST $ CY+1  EST $ FY   | TOT $ AUTH| TOT $ INCR| ACT. $ CY | PROJ. OFF | REMARKES  87/09/14
------------------------------------------------------------------------------------------------------------------
 6737 |CMPLETED|       0.00       0.00       0.00   | 180,560.00| 180,560.00|       0.00|SEMERY    |
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
TITLE:ADVANCED BUS SUSPENSION
------------------------------------------------------------------------------------------------------------------
TDC # | STATUS |  EST $ CY    EST $ CY+1  EST $ FY   | TOT $ AUTH| TOT $ INCR| ACT. $ CY | PROJ. OFF | REMARKES  87/10/15
------------------------------------------------------------------------------------------------------------------
 6500 |ACTIVE  |       0.00       0.00       0.00   | 200,000.00| 200,000.00|       0.00|MARSHALL  |ENERGY R&D FUNDING FOR
                                                                                                 |PROJECT NO. 6499.
                                                                                                 |
                                                                                                 |
                                                                                                 |
                                                                                                 |
```

3.14.1

-2

OPE 2

3 YEAR MODAL PLAN

Liste pour : M.E.CAT : M
M.E.CAT : M1
M.E.CAT : M111

PROJE	TITRE	PRJT TTL	CY#PLAN	EST $ CY	NY#PLAN	EST$CY+1	FY#PLAN	EST#FY	P.O.	SPONS
4806		PAVEMENT VEHICLE PRELIM.DESIGN	0.00	0.00	0.00	0.00	0.00	0.00		
6805		HIGHWAY SNOW DRIFT CONTROL	0.00	0.00	0.00	15,060.00	0.00	0.00		
6806		HIGHWAY SNOW DRIFT CONTROL	0.00	42,500.00	0.00	41,000.00	0.00	0.00		
6808		HIGHWAY SNOW DRIFT CONTROL	0.00	62,500.00	0.00	0.00	0.00	0.00		
9999	SNOW DRIFT	N/A	50,000.00	0.00	0.00	0.00	50,000.00	0.00	SABO	M111
Total (5 Rec.) Pour M.E.CAT		= M111	50,000.00	105,000.00	0.00	56,060.00	50,000.00	0.00		
Total (5 Rec.) Pour M.E.CAT		= M1	50,000.00	105,000.00	0.00	56,060.00	50,000.00	0.00		

Liste pour : M.E.CAT : M
M.E.CAT : M2
M.E.CAT : M221

PROJE	TITRE	PRJT TTL	CY#PLAN	EST $ CY	NY#PLAN	EST$CY+1	FY#PLAN	EST#FY	P.O.	SPONS
6175	WEIGHT & DIMENSION	WEIGHTS & DIMENSIONS STUDY	0.00	0.00	0.00	0.00	0.00	0.00	SABO	M221
6787		LOW COST WEIGH-IN-MOTION SCALE	0.00	31,761.21	0.00	0.00	0.00	0.00		
6788		LOW COST WEIGH-IN-MOTION SCALE	0.00	50,299.92	0.00	0.00	0.00	0.00		
6374	VWD REG. IMPACT	VWD REGULATION IMPACT TRUCKING	0.00	18,993.17	0.00	0.00	0.00	0.00	SABO	DBRD
6287	TILT TABLE	ROAD VEHICLE TILT TABLE	0.00	0.00	0.00	0.00	0.00	0.00	SABO	M-SURF
Total (5 Rec.) Pour M.E.CAT		= M221	0.00	101,054.30	0.00	0.00	0.00	0.00		

Liste pour : M.E.CAT : M
M.E.CAT : M2
M.E.CAT : M222

PROJE	TITRE	PRJT TTL	CY#PLAN	EST $ CY	NY#PLAN	EST$CY+1	FY#PLAN	EST#FY	P.O.	SPONS
6732		ACTIVE SUSPENSION - TRUCKS	0.00	7,491.92	0.00	0.00	0.00	0.00		
6330	DRIV. SEAT VIBRATION	DRIVER SEAT VIBRATION	0.00	0.00	0.00	0.00	0.00	0.00	SABO	M222
9999	ACTIVE SUSPENSION	N/A	0.00	0.00	0.00	0.00	0.00	0.00	SABO	M222
6383	BULK TRAILER II PH2	BULK TRAILER II PHASE II	0.00	0.00	0.00	0.00	0.00	0.00	SABO	M-DSS
6384	BULK TRAILER II PH2	BULK TRAILER II PHASE II	0.00	0.00	0.00	0.00	0.00	0.00	SABO	

3.14.2

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                                                                                                      PAGE    1
                                       GENERAL PROGRAM INFORMATION                                    87/11/05
                                       ***************************
PROGRAM :
-----------------------------------------------------------------------------------------------------------------
SPONS # |SPONSOR I.D                  |AIP FUNDS CY| AUTH. FUNDS|TDC # |TITLE                           |EST CY/PLAN
-----------------------------------------------------------------------------------------------------------------
LB0256  |                             |       0.00 |  50,000.00 | 6955 |SMOKE MASK                      | -15,000.00
        |                             |            |            |      |                                |
LB0235  |RAIL SINGLE CYL.R&D  5.5.2.14 | 165,000.00 | 200,000.00 | 6798 |LABORATORY DIESEL ENGINE-PH.4   | 200,000.00
        |                             |            |            | 9999 |OTHER-RAIL CYL.RESEA            |  95,000.00
        |                             |            |            |      |                                |
LB0256  |                             |       0.00 |  50,000.00 | 6929 |DSS FEES 1987-88                |  10,000.00
        |                             |            |            | 6832 |DUAL-FUEL RAIL LOCOMOTIVE       |  63,200.00
        |                             |            |            |      |                                |
LC0236  |FUEL STOR.&HANDLING  5.5.3.02 |  75,000.00 |  75,000.00 | 6804 |PROPANE REFUELLING HARDWARE     |  65,000.00
        |                             |            |            | 6653 |SRI BATTERIES/MATERIALS STUDY   |  19,000.00
                                                   ------------                                       -----------
                                           TOTAL : 375,000.00                                   TOTAL : 437,200.00
```

3.14.3

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                                   SPECIFIC PROJECT INFORMATION
                                   ============================

                                   PROGRAM :        SPONSOR I.D   :
                                   SPONSOR NUMBER: LB0256
                                   AIP  FUNDS CY BY SPONSOR :         0.00
                                   AUTH. FUNDS CY BY SPONSOR:    50,000.00
TITLE:DUAL-FUEL RAIL LOCOMOTIVE
-----------------------------------------------------------------------------------------------------------------------------
TDC # | STATUS |  EST $ CY     EST $ CY+1  EST $ FY   | TOT $ AUTH| TOT $ INCR| ACT. $ CY | PROJ. OFF | REMARKES  87/10/14
-----------------------------------------------------------------------------------------------------------------------------
 6832 |ACTIVE  |  63,200.00        0.00        0.00   |  74,600.00|  62,343.79|  45,406.89|NISHIZAKI  |PROJECT REVIEW MEETING
                                                                                                      |ARRANGEMENTS BEING MADE.
                                                                                                      |
                                                                                                      |
                                                                                                      |
                                                                                                      |
                                                                                                      |
                                                                                                      |
                                                                                                      |
TITLE:PROPANE REFUELLING HARDWARE
-----------------------------------------------------------------------------------------------------------------------------
TDC # | STATUS |  EST $ CY     EST $ CY+1  EST $ FY   | TOT $ AUTH| TOT $ INCR| ACT. $ CY | PROJ. OFF | REMARKES  87/10/16
-----------------------------------------------------------------------------------------------------------------------------
 6804 |NEGOTIAT|  65,000.00  70,000.00       0.00   | 135,000.00|       0.00|       0.00|MORGAN     |ICG GAS IS APPROACHING CGA
                                                                                                      |FOR INDUSTRY - WIDE AGREEMENT
                                                                                                      |BEFORE RE-QUOTING
                                                                                                      |
                                                                                                      |
                                                                                                      |
                                                                                                      |
                                                                                                      |
                                                                                                      |
TITLE:SRI BATTERIES/MATERIALS STUDY
-----------------------------------------------------------------------------------------------------------------------------
TDC # | STATUS |  EST $ CY     EST $ CY+1  EST $ FY   | TOT $ AUTH| TOT $ INCR| ACT. $ CY | PROJ. OFF | REMARKES  87/10/16
-----------------------------------------------------------------------------------------------------------------------------
 6653 |ACTIVE  |  19,000.00        0.00        0.00   |  38,000.00|  29,349.00|  10,854.00|MORGAN     |SPONSORS OF STUDY MEETING
                                                                                                      |AT SRI OCTOBER 5 AND 6
                                                                                                      | .
                                                                                                      |
                                                                                                      |
                                                                                                      |
                                                                                                      |
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3.14.4

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Liste pour : CSPONSOR        : CONS
------------------------------------------
PROJE PRJT TTL                         SPONS  TITRE                EST $ CY     CY$PLAN      EST$CY+1     NY$PLAN    OFF PRJT     P.O.
===== ============================== ====== ==================== ============ ============ ============ ============ ==========   ====
 6211 STOL ENERGY EFFICIENCY                STOL ENERGY EFF.             0.00         0.00         0.00         0.00 MYERS        MYER
 6145 NACELLE AIRFLOW OPT. (PITOT)          NACELLE OPTIMIZATION         0.00         0.00         0.00         0.00 MYERS        MYER
 6147 GAS TURBINE CERAMICS PHASE 2          GAS TURB.CERAM. II           0.00         0.00         0.00         0.00 MYERS        MYER
 6167 NACELLE AIRFLOW OPT.(SCOOP)           NACELLE OPTIMIZATION         0.00         0.00         0.00         0.00 MYERS        MYER
 6316 LOCOMOTIVE FUEL SAVING SYSTEM         LOCO FUEL SAVING             0.00         0.00         0.00         0.00 DIBBLE
 6329 SIMUL. FERROVIAIRE PORT DE MTL        INTER.SIMUL.PT.MTL.          0.00         0.00         0.00         0.00 WHITEHEAD    HIRO
 6358 STANDARDS FOR SIGNAL PHASING          STAND.SIGNAL PHASING         0.00         0.00         0.00         0.00 SUEN         HIRO
 6384 BULK TRAILER II PHASE II              BULK TRAILER II PH2          0.00         0.00         0.00         0.00 SABOUNGHI    SABO
 6403 ALRT IMPACT VANCOUVER                 ALRT IMPACT VANC.            0.00         0.00         0.00         0.00 SUEN         SUEN
 6500 ADVANCED BUS SUSPENSION               ADV. BUS SUSPENSION          0.00         0.00         0.00         0.00 MARSHALL     MARS
 6572 SYNTHETIC LUBRICANT TEST PROGR        SYNTH.LUBRI.TEST PRG         0.00         0.00         0.00         0.00 SABOUNGHI    SABO
 6979 PROTOTYPE 45FT INTERCITY BUS                                       0.00         0.00   160,000.00         0.00 MARSHALL
 6495 CO2 REFRIGERATION              CA0216 CO2 REFRIGERATION      119,500.00   129,000.00         0.00         0.00 SABOUNGHI    SABO
 6593 HEAVY VEHICLE FUEL CONSUMPTION CA0216 HEAVY VEH. FUEL CONS    64,396.96    92,000.00         0.00         0.00 SABOUNGHI    SABO
 6884 TRUCK DRIVE TRAIN TRIBOLOGY    CA0216                         21,051.04         0.00   128,948.96         0.00 SABOUNGHI
 6901 KNOWLEDGE-BASED DISPATCHER HEL CA0216                         40,052.00         0.00    20,000.00         0.00 SABOUNGHI
 6617 CONDITIONNEMENT D'AIR-AUTOCARS CA0218 BUS AIR QUALITY          7,076.19         0.00         0.00         0.00 MARSHALL     HIRO
 6872 KER-TRAIN BUS INSTALLATION     CA0218                        100,000.00         0.00   100,000.00         0.00 MORGAN
 6928 DSS FEES CONS 1987-88          CA0218                         30,000.00         0.00         0.00         0.00 SIDHOM
 6820 INTEGRATED TRAFFIC SYSTEM      CA0219                         67,242.10         0.00    65,835.00         0.00 MORGAN
 4801 INNOVATIVE AIRCRAFT CONFIG.    CB0222 A/C CONFIGURATION            0.00         0.00         0.00         0.00 MYERS        MYER
 6599 AERONAUTICAL TECHNOLOGY INVEST CB0222 AERO TECH INVEST             0.00         0.00         0.00         0.00 MYERS        MYER
 6563 RAILWAY MOTIVE POWER DEV.STUDY CB0224 RAILW.MOTIVE POWER      34,496.64         0.00         0.00         0.00 VERSAILLES   VERS
 6834 RADIAL AXLE TRUCK TESTING PH 4 CB0224                         39,000.00         0.00         0.00         0.00 DIBBLE
 6674 TUG/BARGE SYST DATA LOGGING    CB0226 TUG/BARGE SYSTEM        40,746.50    40,000.00         0.00         0.00 BAYLY        BAYL
                                                                 ============ ============ ============ ============
                                                                   563,561.43   261,000.00   474,783.96         0.00
Total ( 25 Rec.) Pour CSPONSOR       = CONS
```

3.14.5

```
07/11/05 [09:32:47]

Liste pour : SPONSOR          : CONS
             SPONS #          :
---------------------------------------------
PROJE  TITRE                  TOT$AUTH      CY$PLAN      EST $ CY     INCR$ CY     NY$PLAN      EST$CY+1     STATUS      P.O.
=====  ====================   ===========   ===========  ===========  ===========  ===========  ===========  ==========  ====
 6145  NACELLE OPTIMIZATION     50,000.00         0.00         0.00         0.00         0.00         0.00  ACTIVE      MYER
 6147  GAS TURB.CERAM. II       37,500.00         0.00         0.00         0.00         0.00         0.00  ACTIVE      MYER
 6167  NACELLE OPTIMIZATION    154,655.00         0.00         0.00         0.00         0.00         0.00  ACTIVE      MYER
 6211  STOL ENERGY EFF.        200,000.00         0.00         0.00         0.00         0.00         0.00  PRE-AMEN    MYER
 6304  LAB DIESEL ENG. PH.3    340,058.07         0.00         0.00         0.00         0.00         0.00  ACTIVE      NISH
 6316  LOCO FUEL SAVING        100,000.00         0.00         0.00         0.00         0.00         0.00  ACTIVE
 6329  INTER.SIMUL.PT.MTL.      97,300.00         0.00         0.00         0.00         0.00         0.00  ACTIVE      HIRO
 6358  STAND.SIGNAL PHASING     29,550.00         0.00         0.00         0.00         0.00         0.00  CMPLETED    HIRO
 6384  BULK TRAILER II PH2      57,486.00         0.00         0.00         0.00         0.00         0.00  ACTIVE      SABO
 6403  ALRT IMPACT VANC.       100,000.00         0.00         0.00         0.00         0.00         0.00  ACTIVE      SUEN
 6500  ADV. BUS SUSPENSION     200,000.00         0.00         0.00         0.00         0.00         0.00  ACTIVE      MARS
 6572  SYNTH.LUBRI.TEST PRG    224,231.00         0.00         0.00         0.00         0.00         0.00  ACTIVE      SABO
                              ===========   ===========  ===========  ===========  ===========  ===========
                               1590,780.07         0.00         0.00         0.00         0.00         0.00
Total ( 12 Rec.) Pour SPONS #            =

Liste pour : SPONSOR          : CONS
             SPONS #          : CA0216
---------------------------------------------
PROJE  TITRE                  TOT$AUTH      CY$PLAN      EST $ CY     INCR$ CY     NY$PLAN      EST$CY+1     STATUS      P.O.
=====  ====================   ===========   ===========  ===========  ===========  ===========  ===========  ==========  ====
 6495  CO2 REFRIGERATION       217,884.00   129,000.00   119,500.00    73,994.01         0.00         0.00  ACTIVE      SABO
 6593  HEAVY VEH. FUEL CONS    275,000.00    92,000.00    64,396.96    37,396.96         0.00         0.00  ACTIVE      SABO
 9999  OTHER-ROAD VEHICLE            0.00         0.00         0.00         0.00         0.00         0.00  ACTIVE      SABO
 9999  BULK TRAILERII  PH3           0.00         0.00         0.00         0.00         0.00         0.00  ACTIVE      SABO
                              ===========   ===========  ===========  ===========  ===========  ===========
                                492,884.00   221,000.00   183,896.96   111,390.97         0.00         0.00
Total ( 4 Rec.) Pour SPONS #             = CA0216

Liste pour : SPONSOR          : CONS
             SPONS #          : CA0218
---------------------------------------------
PROJE  TITRE                  TOT$AUTH      CY$PLAN      EST $ CY     INCR$ CY     NY$PLAN      EST$CY+1     STATUS      P.O.
=====  ====================   ===========   ===========  ===========  ===========  ===========  ===========  ==========  ====
 6617  BUS AIR QUALITY          75,000.00         0.00     7,076.19     7,076.19         0.00         0.00  ACTIVE      HIRO
 9999  ADVANCE DESING BUS            0.00         0.00         0.00         0.00         0.00         0.00  ACTIVE      WHIT
                              ===========   ===========  ===========  ===========  ===========  ===========
                                 75,000.00         0.00     7,076.19     7,076.19         0.00         0.00
Total ( 2 Rec.) Pour SPONS #             = CA0218
```

3.14.6

```
87/11/05 [09:32:47]                                                                                       Page 5

Liste pour : SPONSOR           : LIOU
             SPONS #           : LC0236
----------------------------------------
PROJE  TITRE                  TOT$AUTH     CY$PLAN      EST $ CY     INCR$ CY     NY$PLAN      EST$CY+1     STATUS      P.O.
=====  ====================  ===========  ===========  ===========  ===========  ===========  ===========  ==========  ====
 9999  OTHER-FUEL HANDLING          0.00         0.00         0.00         0.00         0.00         0.00  ACTIVE
                             ===========  ===========  ===========  ===========  ===========  ===========
                                    0.00         0.00         0.00         0.00         0.00         0.00
Total ( 2 Rec.) Pour SPONS #         = LC0236

                             ===========  ===========  ===========  ===========  ===========  ===========
                              110,000.00    95,000.00         0.00         0.00         0.00         0.00
Total ( 7 Rec.) Pour SPONSOR         = LIOU

                             ===========  ===========  ===========  ===========  ===========  ===========
                             2687,468.74   631,000.00   225,469.79   149,427.14         0.00         0.00
 ### GRAND Total( 42 Rec.) ###
```

3.14.7

```
87/11/05 [09:59:14]                                                                   Page 6

Liste pour : P.O. ID          : MYER
             SPONS #          :
----------------------------------------------
PROJE  TITRE                  CY$PLAN      EST $ CY     NY$PLAN      EST$CY+1     STATUS
=====  =====================  ===========  ===========  ===========  ===========  ==========
 6145  NACELLE OPTIMIZATION          0.00         0.00         0.00         0.00  ACTIVE
 6147  GAS TURB.CERAM. II            0.00         0.00         0.00         0.00  ACTIVE
 6167  NACELLE OPTIMIZATION          0.00         0.00         0.00         0.00  ACTIVE
 6211  STOL ENERGY EFF.              0.00         0.00         0.00         0.00  PRE-AMEN
                              ===========  ===========  ===========  ===========
                                     0.00         0.00         0.00         0.00
Total ( 4 Rec.) Pour SPONS #           =

Liste pour : P.O. ID          : MYER
             SPONS #          : CB0222
----------------------------------------------
PROJE  TITRE                  CY$PLAN      EST $ CY     NY$PLAN      EST$CY+1     STATUS
=====  =====================  ===========  ===========  ===========  ===========  ==========
 4801  A/C CONFIGURATION             0.00         0.00         0.00         0.00  PRE-AMEN
 6590  AERO TECH INVEST              0.00         0.00         0.00         0.00  PRE-AMEN
 9999  GAS-TURB.CERAM. III      50,000.00         0.00         0.00         0.00  ACTIVE
 9999  ADV.TECH.GASTURBINE      40,000.00         0.00         0.00         0.00  ACTIVE
 9999  OTHER-A/C STRUC-SYS     125,000.00         0.00         0.00         0.00  ACTIVE
 9999  OTHER-A/C PROPULSION          0.00         0.00         0.00         0.00  ACTIVE
                              ===========  ===========  ===========  ===========
                               215,000.00         0.00         0.00         0.00
Total ( 6 Rec.) Pour SPONS #           = CB0222

                              ===========  ===========  ===========  ===========
                               215,000.00         0.00         0.00         0.00
Total ( 10 Rec.) Pour P.O. ID          = MYER
```

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87/11/05 [10:46:29]                        TWO YEARS MODAL PLAN                                                        Page 1

Liste pour : M.E.CAT           : E
             M.E.CAT           : E1
             M.E.CAT           : E110
---------------------------------------
PROJE  TITRE                 PRJT TTL                          CY$PLAN     EST $ CY    NY$PLAN     EST$CY+1    OFF PRJT    P.O.  SPONS
=====  ====================  ============================== =========== =========== =========== =========== =========== ====  ======
 4594                        CSA COMM. TRANS. FOR DISABLED            0           0           0           0 NISHIZAKI
 6071  COMMUTER RAIL ACCES   COMMUTER RAIL ACCESS                     0           0           0           0 SUEN        SUEN
 6620                        COQUILLE DE VOYAGE                       0           0           0           0 SMITH B
 6701                        ERGO ASSESSMENT MODIFIED VANS            0           0           0           0 SMITH B
 6823                        MULTIPURPOSE VEHICLE DEMO                0      52,358           0      11,710 SMITH B
 6873                        MIRAGE XL LIFT INSTALLATION              0     209,350           0           0 MARSHALL
 9999  INTER.BUS ACCESS      N/A                                 75,000           0           0           0 N/A         MARS  E100
 9999  46 FT ACESS BUS       N/A                                250,000           0           0           0 N/A         MARS  E100
 9999  ENSIGN EMPEROR ACCES  N/A                                 75,000           0           0           0 N/A         MARS  E100
 9999  MULTIP. VEH. DEMO     N/A                                 75,000           0           0           0 N/A         NISH  E110
 9999  MINIVAN  DEV. & EVAL  N/A                                 50,000           0           0           0 N/A         HERO  E110
 9999  SCAT EXPO '86         N/A                                 10,000           0           0           0 N/A         HERO  E110
 9999  ACCES. 2LEV. COACH    N/A                                 50,000           0           0           0 N/A         MARS  E110
 9999  E&H SEATS INTER. BUS  N/A                                 20,000           0           0           0 N/A         MARS  E110
 9999  TRANSFER SHELL        N/A                                 60,000           0           0           0 N/A         HIRO  E110
 9999  NEW DEVICES INT. BUS  N/A                                 50,000           0           0           0 N/A         MARS  E110
                                                            =========== =========== =========== ===========
                                                                715,000     261,708           0      11,710

Total ( 16 Rec.) Pour M.E.CAT          = E110

Liste pour : M.E.CAT           : E
             M.E.CAT           : E1
             M.E.CAT           : E120
---------------------------------------
PROJE  TITRE                 PRJT TTL                          CY$PLAN     EST $ CY    NY$PLAN     EST$CY+1    OFF PRJT    P.O.  SPONS
=====  ====================  ============================== =========== =========== =========== =========== =========== ====  ======
 6466  PORT. TRAIN W/C LIFT  PORTABLE TRAIN BASED W/C LIFT       20,000           0      70,000           0 SMITH B     SMIT
 6538                        TRANSFER CHAIR EVALUATION                0           0           0           0 MARSHALL
 6825                        TRANSFER CHAIR EVALUATION                0      29,000           0           0 MARSHALL
 6967                        SMALL AIRCRAFT ACCESSIBILITY             0      20,000           0      30,000 SMITH B           TR0203
 9999  LIFT PREVOST ARTIC    N/A                                100,000           0           0           0 N/A         MARS  E100
 9999  TRANSFER CHAIR D&D    N/A                                150,000           0           0           0 N/A         HIRO  E100
 9999  EL LIFT STRTURE VER   N/A                                 40,000           0           0           0 N/A         MARS  E100
 9999   COMMUTER AIR ACESS   N/A                                 75,000           0           0           0 N/A         SMIT   E100
 9999  PLANE BOARDING DEMO   N/A                                100,000           0           0           0 N/A         NISH  E120
 9999  LIFTS EVALUATION      N/A                                 45,000           0           0           0 N/A         SMIT  E120
                                                            =========== =========== =========== ===========
                                                                530,000      49,000      70,000      30,000

Total ( 10 Rec.) Pour M.E.CAT          = E120
```

3.14.8

APPENDIX A - SECTION 3.15

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                    *** MENU pour EDTDC          ***
                    ---------------------------------

   1- PROJECTS IN A-I-P STATUS              2- R&D EXPENDITURES BY ORG. TYPE
   3- R&D EXPENDITURES BY REGION            4- CONTRACTOR INFORMATION
   5- PROJECTS IN NEGOTIATION               6- DETAILS OF TIES CONTRACT
   7- R&D REPORT                            8- OUTSTANDING INVOICES CY
   9- PROJECT STATUS REPORT                10- PROJECT PROFILE SHEET
  11- PROJECTS IN REPORTING STATUS         12- ACTIVE PROJ. MORE THAN A YEAR

Choisissez une fonction->
```

87/11/04

PROJECTS IN AIP STATUS

PROJ.#	P.O.NAME	PROJECT TITLE	CONTRACTOR	TOTAL$AUTH.	AIP DATE	WEEKS IN AIP
6855	MORGAN	HIGH SPEED RAIL DICTIONARY		20,000.	87/01/05	44
6871	MORGAN	KER-TRAIN BUS INSTALLATION		250,000.	87/02/09	39
6933	SMITH B	E&D PERSONAL MOBILITY SEMINAR		60,000.	87/06/08	22
6982	EKINS	ADVANCED TRAIN CONTROL BIBLIOG		25,000.	87/08/27	10
6985	RICHARD	ARCTIC SURVIVAL SLED	MELVILLE SHIPPING LTD	50,000.	87/09/17	7
6984	DIBBLE	STUDY OF CMA FOR AIRPORT USE		50,000.	87/09/17	7
6989	RICHARD	INFORMATION SYSTEMS ANALYSIS		60,000.	87/09/21	7
6994	LAFRAMBOISE	MAQUETTE SEGMENTEE		175,000.	87/09/23	6
6992	ROWAN	TIES: RAIL SYSTEMS RESEARCH	QUEEN'S UNIVERSITY - CIGGT	300,000.	87/09/23	6
6995	POSLUNS	ELT FIELD TRIALS		299,800.	87/09/25	6
7004	MYERS	LANDING ON NARROW AIRSTRIPS		497,000.	87/09/25	6
7000	PEIRCE	RIDGE MODELLING	ARCTEC NEWFOUNDLAND LIMITED	155,000.	87/09/25	6

3.15.1

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87/11/04                          R&D EXPENDITURES BY ORGANIZATION TYPE                    1985/86
                                  =====================================                    =======

        CATEGORIE                                    TOT$AUTH        %            EST$CY        %
=================================================================================================

AIP/RFP (WHEN CONTRACTOR NOT IDENTIFIED)           469,102.        1.0          242,412.      2.1
TDC                                              5,329,300.       11.2        1,586,000.     13.6
OTHER FEDERAL GOVERNMENT                           454,300.        1.0          125,215.      1.1
UNIVERSITIES AND UNIVERSITY INSTITUTES           2,337,723.        4.9          268,410.      2.3
OTHER NON - PROFIT INSTITUTES                    1,220,894.        2.6          118,860.      1.0
CANADIAN INDUSTRY - CONSULTANTS                 14,160,973.       29.8        3,560,401.     30.5
CANADIAN INDUSTRY - MANUFACTURERS               17,325,930.       36.5        4,750,189.     40.7
CANADIAN INDUSTRY - OPERATIORS                   3,215,149.        6.8          442,421.      3.8
CANADIAN INDUSTRY - OTHERS                       2,877,669.        6.1          552,089.      4.7
ALL FOREIGN PERFORMERS                             120,100.        0.3           19,000.      0.2

                   ==============================================================================
                        TOTAL                   47,511,140.      100.0       11,664,997.    100.0
                   ==============================================================================

THE ABOVE FIGURES HAVE BEEN ROUNDED OFF TO WHOLE NUMBERS.
THEREFORE, THE SUM OF THE EXPENDITURES AND PERCENTAGES
MAY DEVIATE SLIGHTLY FROM THEIR TOTALS.
```

3.15.2

```
[illegible] EXPENDITURES BY REGION                 1987/88
=========================

REGIONS          TOT $ AUTH          %   EST $ CY        %
..........................................................

NFLD                777,806.       2.2    432,106.      5.2
NOVA SCO          1,160,419.       3.3    100,676.      1.2
N.BRUNSW            153,229.       0.4     41,281.      0.5
QUEBEC           12,879,860.      36.3  2,890,670.     35.0
ONTARIO          10,125,062.      28.5  2,065,844.     25.0
MAN               1,004,282.       2.8    390,000.      4.7
SASK                162,460.       0.5     92,061.      1.1
ALBERTA           2,763,617.       7.8    444,447.      5.4
B.C.              6,239,509.      17.6  1,793,006.     21.7
NCR(QUE)            142,000.       0.4     19,000.      0.2
NCR(ONT)          6,158,965.      17.4  1,361,099.     16.5
FOREIGN              82,100.       0.2          0.      0.0
==========================================================
TOTAL            35,490,344.     117.4  8,269,091.    116.5
==========================================================
AIP TOTAL         6,158,965.            1,361,099.
```

3.15.3

```
        PERFORMER :SMC INC.                                 CONTRACTORS PROJECT INFORMATION
                                                            ================================
OFFICIER   TITLE                               PROJ# STATUS      TOT$AUTH PREVIONS YRS      ACT$CY     EST$CY SPONSORS    FUNDING
========   ================================== ===== ======      ======== ============      ======     ====== ========    =======
POSLUNS    COMM/COMP/ELEC(TIES) SMC INC.       6874  NEGOTIAT     130,000            0           0          0 TDC-O&M     130,000
GORE       WHEEL CRACK DETECTION SYSTEM        6940  NEGOTIAT     155,000            0           0     70,000 TDC-O&M      65,000
                                               6941                                                           DSS          90,000
                                                               ===========  =========== =========== ===========
                                                                   285,000            0           0      70,000
```

3.15.4

87/11/04

PROJECTS IN NEGOTIATION STATUS

PROJ.#	P.O.NAME	PROJECT TITLE	DSS OFF.	CONTRACTOR	TOTAL$AUTH.	REQ.DATE	WEEKS	REQUIS. NO
6804	MORGAN	PROPANE REFUELLING HARDWARE	DSS-MTL		135,000.	86/09/22	59	6-6536
6883	SABOUNGHI	TRUCK DRIVE TRAIN TRIBOLOGY	DSS-MTL	ESSO PETROLEUM CANADA	450,000.	87/03/25	32	6-6569
6902	SMITH T	TECHNICAL WRITING	DSS-MTL		130,000.	87/04/21	29	7-7500
6921	THERRIEN	COMMUNICATION POUR PA&H 87-88	DSS-MTL		30,000.	87/06/06	22	7-7510
6918	AUDETTE	AUTOMATED X-RAY SCREENING	DSS-MTL		650,000.	87/06/11	21	7-7514
6915	SABOUNGHI	CELLULAR RADIO TRACKING	DSS-OTT	RMS INDUSTRIAL CONTROLS INC.	409,000.	87/06/11	21	7-7511
6914	SUEN	TIES E&D PROGRAM	DSS-MTL		150,000.	87/06/11	21	7-7512
6956	POSLUNS	DIGITAL VOICE AND DATA LOGGER	DSS-OTT	KOM INC.	273,000.	87/07/22	15	7-7520
6953	RICHARD	SMOKE MASK	DSS-MTL	AVIATION PLANNING SERVICES LTD	105,450.	87/07/22	15	7-7518
6940	GORE	WHEEL CRACK DETECTION SYSTEM	DSS-MTL	SNC INC.	155,000.	87/07/22	15	7-7519
6944	AUDETTE	SAR USE INTERACTIVE ASSISTANCE	DSS-MTL	INTERA TECHNOLOGIES LTD	354,000.	87/07/24	15	7-7521
6903	MORGAN	ELECTROCHEMICAL CONSULTING	DSS-MTL		10,000.	87/07/27	15	7-7522
6947	SEMERY	PROPULSION DYNAMICS MATH.MODEL	DSS-MTL	ARCTEC CANADA LIMITED	100,000.	87/08/03	14	7-7525
6967	SMITH B	SMALL AIRCRAFT ACCESSIBILITY	DSS-MTL		50,000.	87/08/04	14	7-7526
6966	BAYLY	ICEBREAKER DESIGN SYNTHESIS	DSS-MTL		160,000.	87/08/21	11	7-7527
6975	MCLAREN	TIES: RAIL FREIGHT R&D	DSS-MTL	MAUGHAN RLY CNSLTG SERV INC.	50,000.	87/08/21	11	7-7531
6969	AUDETTE	SONAR RETRACTABLE TRANSDUCER	DSS-MTL	C-TECH LTD	490,000.	87/08/24	11	7-7528
6934	GORE	ARCTIC STRUCTURES CORROSION	DSS-EDMT		140,000.	87/08/26	10	7-7532
6971	PEIRCE	ICEBREAKER MID-BODY RESISTANCE	DSS-MTL	MELVILLE SHIPPING LTD	119,794.	87/08/26	10	7-7529
6978	MARSHALL	PROTOTYPE 45FT INTERCITY BUS	DSS-WPG	MOTOR COACH INDUSTRIES	960,000.	87/09/04	9	7-7533
6964	BAYLY	DEM ICE RESISTANCE SIMULATION	DSS-NFLD	OFFSHORE MECHANICS LTD	107,800.	87/09/30	5	7-7534
6976	SEMERY	ICE LOADS ON PROPELLER BLADES	DSS-MTL	GEOTECHNICAL RESOURCES LTD	218,065.	87/10/05	5	7-7535
6998	DIBBLE	ANALYSIS OF RUNWAY ROUGHNESS	DSS-MTL		50,000.	87/10/14	3	7-7536
6874	POSLUNS	COMM/COMP/ELEC(TIES) SNC INC.	DSS-MTL	SNC INC.	130,000.	87/12/10	0	6-6509

3.15.5

```
                                      RAPPORT SOMMAIRE 'TIES'        87/11/04
                                      -----------------------
PROJET :  6352      E&H PROGRAM TIES :TRANSVISION      AUTH:   24,721.00     AGENT PROJ: SUEN
CIE : TRANSVISION CONSULTANTS LTD
=================================================================================================
TIES #    TITRE                            AMNT.AUTH.    $ A DATE       BALANCE      HOLD.CUMUL  STATUT
========  ==============================  ===========  ===========  ===========  ===========  ==========
CA5071                                       4,642.83     4,642.83         0.00          0.00  TERMINER
TASK 1    DATS SCHEDULING SYSTEM                0.00         0.00         0.00        750.00  TERMINER
TASK 2    VOICE-CONTROLLED TECHNOLOGIES      5,994.50     5,994.50         0.00        600.00  TERMINER
TASK 3    EVALUATION PROJECT WORK PLAN         393.25       393.25         0.00          0.00  TERMINER
TASK 4    E&H TRANSPORT PAPER REVIEW         1,540.00     1,540.00         0.00        160.00  TERMINER
TASK 5    DEMONSTRATION PROJECTS EVAL'N     16,000.00    13,112.50     2,887.50      1,600.00  ACTIF
TASK 6    MONITOR ACCESSIBLE BUS DEMO          793.25       793.25         0.00         80.00  TERMINER

                                           ===========  ===========  ===========  ===========
                                            29,363.83    26,476.33     2,887.50      3,190.00
```

3.15.6

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R&D REPORT SUMMARY BY PROJECT OFFICER / SOMMAIRE DU RAPPORT R&D PAR OFFICIER DE PROJET.
-------------------------------------------------------------------------------------------

87/10/16 [14:05:46]                                                      Page 1
OFF PRJT      EST $ CY      INITIATE      MANAGED
===========  ===========  ===========  ===========
AUDETTE        1,459,822      680,650    1,612,989
AVNI             275,488      168,464    1,585,299
BAYLY            310,290      705,468    2,244,998
BERTRAND               0            0      300,000
DIBBLE           535,593      309,560    2,098,020
EKINS             98,579      183,515      201,515
FERLAND                0            0            0
GORE             333,558      863,762    1,809,308
HRYSZKO                0        2,500        2,500
LAFRAMBOISE      257,421      441,305      960,460
MARSHALL       1,625,743      387,469      925,243
MCLAREN           59,213       66,160      195,910
MORGAN           786,445      617,276    2,693,859
MYERS            658,938      697,755    2,179,517
NISHIZAKI      1,160,659    1,092,723    3,107,902
NOGRADY                0            0            0
PEIRCE           199,794            0            0
ROSLUNS          912,770      990,092    1,160,092
RICHARD          165,824            0            0
ROWAN            268,331      391,175      721,888
SABOUNGHI        876,754       51,175    2,022,531
SEMERY           383,000      430,376      430,376
SIDHOM             7,000            0            0
SMITH B          201,569      315,785      472,304
SMITH T           66,285       15,000       95,000
SUEN             346,088      250,000    1,163,297
THERRIEN          63,212       74,000       74,000
VERSAILLES     1,462,784    2,375,426    3,868,560
VESPA             30,304       91,250    1,689,566
WHITEHEAD        108,776      125,000      149,300
             ===========  ===========  ===========
              12,654,256   11,325,888   31,764,437
 *** GRAND Total( 30 Rec.) ***
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3.15.7

7-

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87/10/16 [14:08:58]                                                                                         Page 1
                                      DETAILED R&D REPORT / RAPPORT DETAILLE R&D
                                      ------------------------------------------

Liste pour : OFF PRJT         : AUDETTE
---------------------------------------------
PROJE  PRJT TTL                          TOT$AUTH    PREV YRS    ACT $ CY    EST $ CY    INITIATE    MANAGED
=====  ==============================  ==========  ==========  ==========  ==========  ==========  ==========
 4242  SEA ICE SENSOR ELECTR. DEV.        299,357     299,356           0           0           0           0
 6276  COOPTDC/NRC DEV SC MAG/CO OL        20,000      10,595       2,334       9,404           0      20,000
 6504  EVALUATION OF MPB SENSOR            15,000      15,000           0           0           0      15,000
 6531  ICE NAVIGATION WORKSTATION          30,325      29,960           0           0           0      30,325
 6532  ICE NAVIGATION WORKSTATION         277,000     276,882           0           0           0     277,000
 6564  SONAR ASSESS ICE LOCKED CONDIT     103,543     103,543           0           0           0     103,543
 6565  SONAR ASSESS ICE LOCKED CONDIT     130,000     130,000           0           0           0     130,000
 6574  ICE NAVIGATION SIMULATOR            77,000      77,000           0           0           0      77,000
 6606  MULTI-SENSOR ICE THICK.EVAL.       165,469      45,988     101,162     131,037     177,226     177,226
 6609  IMS DETECTION OF EXPLOSIVES         76,485           0      73,997      76,485           0      50,000
 6615  MULTI-SENSOR ICE THICK.EVAL.        40,000      40,000           0           0      40,000      40,000
 6621  EXPLOSIVES DET.TECH.ASSESSMENT      50,552      50,552           0           0      50,552      50,552
 6627  ICE NAVIGATION WORKSTATION          92,833      92,833           0           0           0      92,833
 6675  MAGLEV SC MAGNET CONST & TEST      349,920     149,311      35,096     200,608     349,920     349,920
 6724  STAR-VUE/MARINE VUE UPGRADE         62,952      62,952           0           0      62,952      62,952
 6781  EVALUATION OF MPB SENSOR            13,000      13,000           0           0           0      13,000
 6782  ICE NAVIGATION SIMULATOR           108,637     108,617           0           0           0     108,637
 6840  IMS DETECTION OF EXPLOSIVES         15,000      15,000           0           0           0      15,000
 6876  NAVFIX-RADAR NAVIGATION SYSTEM     196,284           0           0     100,617           0           0
 6877  NAVFIX-RADAR NAVIGATION SYSTEM     330,000           0      40,464     330,000           0           0
 6879  NAVFIX-RADAR NAVIGATION SYSTEM     150,000           0           0           0           0           0
 6918  AUTOMATED X-RAY SCREENING          650,000           0           0      50,000           0           0
 6939  MULTI-SENSOR ICE THICK.EVAL.        11,756           0      11,756      11,756           0           0
 6944  SAR USE INTERACTIVE ASSISTANCE     150,000           0           0     100,000           0           0
 6945  SAR USE INTERACTIVE ASSISTANCE     204,000           0           0     150,000           0           0
 6960  TDC/CCIW MARINE-VUE & NAV-ICE       45,000           0           0           0           0           0
 6961  TDC/CCIW MARINE-VUE & NAV-ICE      150,000           0           0      74,914           0           0
 6963  TDC/CCIW MARINE-VUE & NAV-ICE       25,000           0           0      25,000           0           0
 6969  SONAR RETRACTABLE TRANSDUCER       390,000           0           0     100,000           0           0
 6970  SONAR RETRACTABLE TRANSDUCER       100,000           0           0     100,000           0           0
                                       ==========  ==========  ==========  ==========  ==========  ==========
                                        4,329,115   1,520,592     264,811   1,459,822     680,650   1,612,989
Total ( 30 Rec.) Pour OFF PRJT        = AUDETTE
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3.15.8

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                                          PROJECT STATUS REPORT
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CONTRACTOR :TRANSVISION CONSULTANTS LTD
PROJECT :E&H PROGRAM TIES :TRANSVISION
PROJECT VALUE :     85,000
DRAFT DUE :87/10/27
FINAL DEL :87/08/21

PROJECT # CSPONSOR   STATUS       TOT$AUTH    ACT$CY   PENDING INV    TOT$INCR    EST$CY
-------------------------------------------------------------------------------------------
   6352    TDC-O&M    ACTIVE         24,721         0             0    24,721          0
   6831    TDPP-E&H   ACTIVE         33,269         0             0    33,269          0
   6847    TDC-EXT    ACTIVE         27,010         0             0    27,010          0

PROJECT #  PREV YEARS   EST$CY+1     EST$FY            REMARKS
---------------------------------------------------------------------------------
   6352        24,721          0          0   THIS PART OF CONTRACT
   6831        33,269          0          0   COMPLETED.
   6847        27,010          0          0
```

3.15.10

87/11/04

PROJECTS IN REPORTING STATUS.

PROJ#	PROJECT TITLE	CONTRACTOR	P.O.NAME	UNPAID BAL.	DATE DRAFT RPT. DATE	WEEKS	EST/ACT FINAL RPT.	REPORT RECEIVED
4929	TDC/CN RAIL RESEARCH PROGRAM	CN RAIL	DIBBLE	1,126	84/10/31	157	86/12/17	FINAL
4046	ARCTIC ENVIRONMENT FACTORS	CANADIAN CLIMATE CENTRE - DOE	BAYLY	434	85/11/05	104	87/10/31	DRAFT
4288	CN TRACK TRAIN DYNAMICS PH 8	CN RAIL	DIBBLE	1,561	86/01/22	93	87/03/31	DRAFT
6146	GAS TURBINE CERAMICS PHASE 2	P&W AIRCRAFT OF CANADA LTD	MYERS	0	86/04/01	83	88/02/15	DRAFT
4239	HULL CORROSION	B.H. LEVELTON & ASSOCIATES LTD	BAYLY	0	86/04/21	80	87/12/31	DRAFT
6780	ICE STRENGTH INDEXER	MELVILLE SHIPPING LTD	GORE	232	86/06/18	72	87/04/01	FINAL
6329	SIMUL. FERROVIAIRE PORT DE MTL	GIRO	WHITEHEAD	0	86/10/06	56	87/08/04	FINAL
6480	UNB TANK THERMAL ANALYSIS PH 2	UNIVERSITY OF NEW BRUNSWICK	DIBBLE	41,280	86/10/08	56	87/11/30	DRAFT
6535	HF/ARCTIC SHIP SAFETY MEASUR'T	POLAR SEA RESEARCH LIMITED	BAYLY	0	86/10/14	55	87/11/13	FINAL
4567	CN TRACK TRAIN DYNAMICS PHASE9	CN RAIL	DIBBLE	35,649	86/10/28	53	87/03/31	FINAL
6460	ICE/PROP.ENGINEERING ANALYSIS	CANADIAN MARINE DRILLING LTD	BAYLY	1	86/11/10	51	87/09/01	FINAL
6561	UTDC/MCI RAILBUS DEVELOPMENT	UTDC INC.	VESPA	30,304	86/11/27	48	86/10/31	DRAFT
6314	LOCOMOTIVE FUEL SAVING SYSTEM	DYNAMIC SCIENCES LIMITED	DIBBLE	0	86/12/10	47	88/03/31	DRAFT
6596	WCSS RAILBUS ON CN LINES	UTDC INC.	VESPA	297	86/12/22	45	87/05/19	FINAL
6574	ICE NAVIGATION SIMULATOR	INTERA TECHNOLOGIES LTD	AUDETTE	20	87/01/07	43	86/10/01	FINAL
6166	NACELLE AIRFLOW OPT.(SCOOP)	DE HAVILLAND AIRCRAFT CO. CAN.	MYERS	0	87/01/07	43	87/03/31	DRAFT
6779	PROTECTION OF PROPELLERS IN IC	W.R. DAVIS ENGINEERING LIMITED	GORE	0	87/01/16	41	87/10/15	FINAL
6669	SHIP TRANSITING RIDGES	WARTSILA ARCTIC INC.	GORE	0	87/02/09	38	87/08/17	FINAL
6629	ACCESSIBLE LONGER BUS STUDY	BEAUCHEMIN,BEATON,LAPOINTE INC	MARSHALL	0	87/02/26	35	87/04/14	FINAL
6622	TRAIN CONTROL-TEST BED SYSTEM	BRITISH COLUMBIA RAILWAY	AVNI	0	87/03/09	34	87/03/31	DRAFT
6753	MICROPROCESSOR& AC LOCOMOTIVE	BROWN BOVERI CANADA INC.	VERSAILLES	0	87/03/12	33	87/10/07	FINAL
6303	LABORATORY DIESEL ENGINE PH.3	BOMBARDIER INC.	NISHIZAKI	-0	87/03/19	32	87/10/22	FINAL
6556	ARCTIC SHIP TECHNOLOGY	MELVILLE SHIPPING LTD	LAFRAMBOISE	0	87/04/08	30	87/07/08	FINAL
6069	AIRCRAFT SIMULATOR RESPONSE	UNIVERSITY OF TORONTO - UTIAS	MYERS	0	87/04/15	29	87/09/14	FINAL
6102	ENERGY EFFECTIVE TUG & BARGE	SEATRONICS TECHNOLOGIES LTD	BAYLY	0	87/04/14	29	87/11/30	DRAFT
6762	MODULE FOR TRAIN ENERGY MODEL	QUEEN'S UNIVERSITY - CIGGT	NISHIZAKI	1,390	87/04/13	29	87/05/30	DRAFT
6642	BREL RAILBUS EVAL (VIA OPER)	VIA RAIL CANADA INC.	VESPA	0	87/04/16	28	87/07/20	FINAL
6379	AUTOM X-RAY SCREENING SYSTEM	ROY BALL ASSOCIATES LIMITED	MYERS	0	87/05/13	25	86/12/31	DRAFT
6285	AL/AIR BATTERY FOR VEHICLES	ALCAN INTERNATIONAL LIMITED	MORGAN	0	87/10/30	25	87/09/30	DRAFT
6749	TRACK STRUCTURE RESEARCH	QUEEN'S UNIVERSITY - CIGGT	ROWAN	976	87/05/12	25	87/11/02	FINAL
6724	STAR-VUE/MARINE VUE UPGRADE	INTERA TECHNOLOGIES LTD	AUDETTE	0	87/05/26	23	87/05/31	DRAFT
6732	ACTIVE SUSPENSION - TRUCKS	C.E. BERTHIAUME TECHNOLOGIES	SABOUNGHI	7,491	87/05/27	23	87/09/24	FINAL
6784	SMALL AIRCRAFT CRASHWORTHINESS	SYPHER MUELLER INTL. INC.	MCLAREN	9,003	87/05/26	23	87/09/30	DRAFT
6764	ERGO ASSESSMENT MODIFIED VANS	WEST PARK RESEARCH	SMITH B	0	87/05/29	22	87/07/31	DRAFT
6640	SEGMENTED MODEL ICE TESTS II	ARCTEC CANADA LIMITED	BAYLY	0	87/06/10	21	87/11/15	DRAFT
6773	BC MOLICELL THERMAL MGT	MOLI ENERGY LIMITED	MORGAN	0	87/06/08	21	87/09/18	FINAL
6341	TIES - MARINE TRANSPORTATION	EYRETECHNICS LIMITED	BERTRAND	60,817	87/06/12	20	87/10/09	FINAL
6783	JARSVAAR PROP/ICE STUDY	VALMET ARCTIC CANADA LTD	BAYLY	4,518	87/06/16	20	87/12/31	DRAFT
6812	AIRWORTHINESS DIRECTIVES CRIT.	INNOTECH AVIATION	AVNI	0	87/06/23	19	87/11/02	FINAL
6864	DEGLACAGE-PORT DE CHICOUTIMI	ICE CONTROL ENTREPRISES INC.	LAFRAMBOISE	0	87/06/19	19	87/11/30	DRAFT
6293	TERMINAL COM SYS: SEN/SPCH	RUTENBERG DESIGN INC.	MORGAN	244	87/07/06	17	87/11/20	DRAFT
6763	VELOCIMETRE A ULTRASON	GENTEC INC.	LAFRAMBOISE	0	87/07/10	16	87/11/30	DRAFT
6844	DETECTION OF OBJECTS AT SEA	NORDCO LIMITED	VERSAILLES	219,503	87/07/15	16	88/09/30	DRAFT
6003	PROPELLER/ICE FE MODEL PHASE 2	MARTEC LIMITED	BAYLY	4	87/07/22	15	87/12/31	DRAFT

3.15.11

87/11/05

ACTIVE PROJECTS MORE THAN ONE YEAR

PROJ#	PROJECT TITLE	CONTRACTOR	P.O.NAME	DRAFT RECEIVED	UNPAID BAL.	AWARDED	WEEKS
4046	ARCTIC ENVIRONMENT FACTORS	CANADIAN CLIMATE CENTRE - DOE	BAYLY	85/11/05	434	79/07/16	433
4102	CN TRACK TRAIN DYNAMICS PH 7	CN RAIL	DIBBLE	87/01/31	3,000	80/04/01	396
4288	CN TRACK TRAIN DYNAMICS PH 8	CN RAIL	DIBBLE	86/01/22	1,561	81/04/01	343
6663	HYDROSTATIC STERN TUBE BEARING	DEPT. OF NATIONAL DEFENCE	GORE	87/11/30	18,901	81/07/31	326
4444	FIELD TEST INSTR LOCO WHEELSET	NATIONAL RESEARCH COUNCIL	DIBBLE	86/11/30	0	81/10/01	317
4242	SEA ICE SENSOR ELECTR. DEV.	MPB TECHNOLOGIES INC.	AUDETTE	84/04/15	0	81/10/22	314
6479	COPOH CONSULTATION SERVICE	COALITION PROV. ORG. HANDICAPP	SMITH B	86/03/31	12,556	81/11/01	313
4591	MINIMUM RESISTANCE BARGE	SEASPAN DEVELOPMENT CO. LTD	BAYLY	82/05/01	260	82/02/08	299
6753	MICROPROCESSOR& AC LOCOMOTIVE	BROWN BOVERI CANADA INC.	VERSAILLES	87/03/12	0	82/06/25	279
4567	CN TRACK TRAIN DYNAMICS PHASE9	CN RAIL	DIBBLE	86/10/28	35,649	82/04/01	275
4801	INNOVATIVE AIRCRAFT CONFIG.	CANADAIR LIMITED	MYERS	87/09/16	23,864	82/10/01	255
6745	TRAIN DYNAMICS SIMULATION	DYNAMIC SCIENCES LIMITED	DIBBLE	86/09/30	0	82/12/15	254
4239	HULL CORROSION	B.H. LEVELTON & ASSOCIATES LTD	BAYLY	86/04/21	0	82/12/21	250
6779	PROTECTION OF PROPELLERS IN IC	W.R. DAVIS ENGINEERING LIMITED	GORE	87/01/16	0	83/02/28	244
4929	TDC/CN RAIL RESEARCH PROGRAM	CN RAIL	DIBBLE	84/10/31	1,126	83/04/01	239
6069	AIRCRAFT SIMULATOR RESPONSE	UNIVERSITY OF TORONTO - UTIAS	MYERS	87/04/15	0	83/10/23	210
6003	PROPELLER/ICE FE MODEL PHASE 2	MARTEC LIMITED	BAYLY	87/07/22	4	83/11/07	208
6749	TRACK STRUCTURE RESEARCH	QUEEN'S UNIVERSITY - CIGGT	ROWAN	87/05/12	976	83/11/10	207
6102	ENERGY EFFECTIVE TUG & BARGE	SEATRONICS TECHNOLOGIES LTD	BAYLY	87/04/14	0	83/12/13	203
6166	NACELLE AIRFLOW OPT.(SCOOP)	DE HAVILLAND AIRCRAFT CO. CAN.	MYERS	87/01/07	0	84/01/03	200
6026	SPECS FOR THYSSEN-WAAS BOW	MARYSTOWN SHIPYARD LIMITED	NISHIZAKI	87/12/31	5,902	84/01/18	197
6146	GAS TURBINE CERAMICS PHASE 2	P&W AIRCRAFT OF CANADA LTD	MYERS	86/04/01	0	84/06/05	178
6276	COOPTDC/NRC DEV SC MAG/CO OL	NATIONAL RESEARCH COUNCIL	AUDETTE	88/03/31	7,070	84/08/07	169
6297	FIBRE OPTICS MARINE SYSTEM	FOCAL MARINE LIMITED	AVNI	87/10/13	0	84/09/06	164
6210	STOL ENERGY EFFICIENCY	DE HAVILLAND AIRCRAFT CO. CAN.	MYERS	87/10/01	46,342	84/09/10	164
6175	WEIGHTS & DIMENSIONS STUDY	CANROAD TRANSPORTATION	SABOUNGHI	87/09/30	0	84/09/11	164
6192	PAVING BLOCKS - CONTINUATION	CENTRE RECH. & CONTROLE APPLI	WHITEHEAD	87/03/31	0	84/10/03	161
6144	NACELLE AIRFLOW OPT. (PITOT)	P&W AIRCRAFT OF CANADA LTD	MYERS	87/09/25	0	84/10/23	158
6174	TIES-MARINE TRANSPORTATION	GERMAN AND MILNE	BERTRAND	87/10/09	400	84/10/31	157
6746	TDRS ENGINEERING SUPPORT	MPB TECHNOLOGIES INC.	ROWAN	87/03/31	0	84/10/30	157
6293	TERMINAL COM SYS: SEN/SPCH	RUTENBERG DESIGN INC.	MORGAN	87/07/06	244	84/11/16	154
6314	LOCOMOTIVE FUEL SAVING SYSTEM	DYNAMIC SCIENCES LIMITED	DIBBLE	86/12/10	0	84/12/03	152
6828	E&H PROGRAM TIES : TES LTD.	TES LIMITED	SUEN	87/08/20	126	84/12/06	151
6347	VADIS AIRBORNE TECHNOLOGY	NORTHERN AIRBORNE TECH. LTD	AVNI	87/10/08	0	85/01/10	146
6348	VADIS AIRBORNE UNIT TEST	NORTHERN AIRBORNE TECH. LTD	AVNI	86/10/31	0	85/01/10	146
6303	LABORATORY DIESEL ENGINE PH.3	BOMBARDIER INC.	NISHIZAKI	87/03/19	-0	85/01/14	146
6629	ACCESSIBLE LONGER BUS STUDY	BEAUCHEMIN,BEATON,LAPOINTE INC	MARSHALL	87/02/26	0	85/01/29	144
6352	E&H PROGRAM TIES :TRANSVISION	TRANSVISION CONSULTANTS LTD	SUEN	87/10/27	0	85/01/24	144
6329	SIMUL. FERROVIAIRE PORT DE MTL	GIRO	WHITEHEAD	86/10/06	0	85/02/04	143
6285	AL/AIR BATTERY FOR VEHICLES	ALCAN INTERNATIONAL LIMITED	MORGAN	87/10/30	0	85/02/07	142
6361	LIGHTWEIGHT BATTERY WHEELCHAIR	B.C. HYDRO	MORGAN	88/01/15	27,005	85/02/07	142
6341	TIES - MARINE TRANSPORTATION	EYRETECHNICS LIMITED	BERTRAND	87/06/12	60,817	84/10/31	140
6383	BULK TRAILER II PHASE II	D. NEUMANN & ASSOCIATES	SABOUNGHI	00/00/00	0	85/02/21	140
6827	COMP SCHEDULG BROKERAGE, B.C.	BRITISH COLUMBIA TRANSIT	SUEN	00/00/00	33,000	85/03/06	139

3.15.12

APPENDIX A - SECTION 3.16

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                    *** MENU pour DGRD           ***
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  1- CONTRACTOR INFORMATION            2- PROJECT STATUS REPORT
  3- PROJECT PROFILE SHEET             4- PROJECTS IN NEGOTIATION
  5- PROJECTS IN A-I-P STATUS          6- DIRECTORY OF PROJECTS
  7- SPECIFIC PROGRAM REPORTS.         8- LATEST PROPOSED PROJECTS
  9- LISTE OF PROJ. ENERGY SPONSORS

Choisissez une fonction->
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PERFORMER :BOMBARDIER INC.                   CONTRACTORS PROJECT INFORMATION
                                             ================================
OFFICIER    TITLE                            PROJ# STATUS       TOT$AUTH PREVIONS YRS      ACT$CY      EST$CY SPONSORS     FUNDING
========    ================================ ===== ======       ======== ============      ======      ====== ========     =======
VERSAILLES  BOGIE MECANO-SOUDE               6775  ACTIVE      1,035,000       37,337      29,909     277,662 ERDA/QUE   1,035,000
VERSAILLES  CAISSE DE METRO GRAND GABARIT    6854  ACTIVE        889,000       11,619      20,729     452,380 ERDA/QUE     889,000
NISHIZAKI   DUAL-FUEL RAIL LOCOMOTIVE        6832  ACTIVE         74,600       11,400      45,406      63,200 LIOS          74,600
NISHIZAKI   LABORATORY DIESEL ENGINE PH.3    6303  ACTIVE      1,030,000      630,000      40,322     300,000 MSERD-RF     289,941
                                             6304                                                             LIOS         340,058
NISHIZAKI   LABORATORY DIESEL ENGINE-PH.4    6797  ACTIVE        400,000            0      40,322     300,000 TDC-O&M      100,000
                                             6798                                                             LIOS         300,000
                                                             ===========  =========== =========== ===========
                                                               3,428,600      690,356     176,689   1,393,242
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3.16.1

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                                                PROJECT STATUS REPORT
                                                =====================

CONTRACTOR :ROBERT ALLAN LTD.,
PROJECT :BARGE DIRECTIONAL STABILITY
PROJECT VALUE :      90,900
DRAFT DUE :00/00/00
FINAL DEL :87/12/31

PROJECT # CSPONSOR  STATUS      TOT$AUTH    ACT$CY  PENDING INV   TOT$INCR    EST$CY
------------------------------------------------------------------------------------
  6765    TDC-O&M   ACTIVE        90,900         0       11,605     36,000    66,505

PROJECT #  PREV YEARS  EST$CY+1     EST$FY              REMARKS
-----------------------------------------------------------------------------
  6765        24,394          0          0    LE CONTRACTEUR A TERMINE LES
                                              ESSAIS.  UN RAPPORT EBAUCHE
                                              EST ATTENDU.
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3.16.2

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MODE TTL : PROGRAM SUPPORT
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PROJE  PRJT TTL                           OFF PRJT     RSPB C  STATUS      TOT $ AUTH    NOM CIE
=====  ================================   ==========   ======  =========   ===========   ==============================
 6705  ALPHACOMP,LASER PRINTING,DISKS     THERRIEN     257140  CMPLETED      14,000.00   ALPHATEXT
 6718  COMMUNICATIONS SUPPORT             SMITH T      257140  ACTIVE        15,000.00   INFOLINK CONSULTANTS INC.
 6657  COMPUTER SYSTEM SUPPORT 86/87      SUEN         257100  CMPLETED     300,000.00   LES SYSTEMES SUR MESURE PB INC
 6888  COMPUTER SYSTEMS SUPPORT 87/88     SUEN         257100  ACTIVE       200,000.00   LES SYSTEMES SUR MESURE PB INC
 6858  DESKTOP PUBLISHING SERVICES        THERRIEN     257140  ACTIVE        31,900.00   INTERLEAF CANADA INC.
 6929  DSS FEES 1987-88                   SIDHOM       257100  ACTIVE        10,000.00
 6928  DSS FEES CONS 1987-88              SIDHOM       257100  ACTIVE        30,000.00
 6926  DSS FEES E&H 1987-88               SIDHOM       257140  ACTIVE        40,000.00
 6927  DSS FEES ENERGY TRANS 1987-88      SIDHOM       257100  ACTIVE        50,000.00
 6925  DSS FEES O&M 1987-88               SIDHOM       257100  ACTIVE        80,000.00
 6909  INFO RETRIEVAL CANOLE 87-92        EKINS        257140  ACTIVE        10,000.00   CISTI
 6650  INFO RETRIEVAL DIALOG              EKINS        257140  CMPLETED      21,600.00   DIALOG INFORMATION SERVICES IN
 6881  INFO RETRIEVAL DIALOG 87-88        EKINS        257140  ACTIVE         5,000.00   OLAM SERVICE CAN LIBRARY ASSN
 6652  INFO RETRIEVAL SDC-ORBIT           EKINS        257140  CMPLETED       2,000.00   SDC INFORMATION SERVICES
 6882  INFO RETRIEVAL SDC-ORBIT 87-88     EKINS        257140  ACTIVE         1,000.00   PERGAMON ORBIT INFOLINE INC.
 6651  ONGOING UTLAS USE TDC LIBRARY      EKINS        257140  CMPLETED      18,000.00   UTLAS INC.
 6646  RESEARCH INFORMATION MGMT          EKINS        257140  ACTIVE       114,915.00   COMMUNICATIONS GILLIES INC.
 6760  SMALL SYST. CONVERSION-IBM PC      EKINS        257140  CMPLETED      36,000.00   JAMES F. HICKLING MANAGEMENT
 6723  SPEC SERVICES                      SIDHOM       257140  ACTIVE        17,000.00   CANADIAN PACIFIC LIMITED
 6672  TDC COMP SYSTEM EVALUATION         POSLUNS      257100  ACTIVE        59,675.00   DIGI-PLUS INC.
 6902  TECHNICAL WRITING                  SMITH T      257140  NEGOTIAT     130,000.00
 6539  TECHNICAL WRITING SUPPORT          SMITH T      257140  ACTIVE        80,000.00   COMMUNICATIONS GILLIES INC.
 6704  TEXT PROCESSING SERVICES           THERRIEN     257140  CMPLETED     108,000.00   ALPHATEXT
 6880  UTLAS USE IN TDC LBY 87-88         EKINS        257140  ACTIVE         9,000.00   UTLAS INC.
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3.16.3

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87/11/04 [14:30:08]
                                                 CO.   RVATION PROGRAM                        Page 1
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Liste pour : SPONS #          :
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PROJE  PRJT TTL                        EST $ CY     INCR$ CY    STATUS     OFF PRJT    NOM CIE
=====  ==============================  ===========  ==========  =========  ==========  ==============================
 6211  STOL ENERGY EFFICIENCY                 0.00        0.00  PRE-AMEN   MYERS       DE HAVILLAND AIRCRAFT CO. CAN.
 6145  NACELLE AIRFLOW OPT. (PITOT)           0.00        0.00  ACTIVE     MYERS       P&W AIRCRAFT OF CANADA LTD
 6147  GAS TURBINE CERAMICS PHASE 2           0.00        0.00  ACTIVE     MYERS       P&W AIRCRAFT OF CANADA LTD
 6167  NACELLE AIRFLOW OPT.(SCOOP)            0.00        0.00  ACTIVE     MYERS       DE HAVILLAND AIRCRAFT CO. CAN.
 6304  LABORATORY DIESEL ENGINE PH.3          0.00        0.00  ACTIVE     NISHIZAKI   BOMBARDIER INC.
 6316  LOCOMOTIVE FUEL SAVING SYSTEM          0.00        0.00  ACTIVE     DIBBLE      DYNAMIC SCIENCES LIMITED
 6329  SIMUL. FERROVIAIRE PORT DE MTL         0.00        0.00  ACTIVE     WHITEHEAD   GIRO
 6358  STANDARDS FOR SIGNAL PHASING           0.00        0.00  CMPLETED   SUEN        DE LEUW CATHER CANADA LTD
 6384  BULK TRAILER II PHASE II               0.00        0.00  ACTIVE     SABOUNGHI   D. NEUMANN & ASSOCIATES
 6403  ALRT IMPACT VANCOUVER                  0.00        0.00  ACTIVE     SUEN        BRITISH COLUMBIA TRANSIT
 6500  ADVANCED BUS SUSPENSION                0.00        0.00  ACTIVE     MARSHALL    UTDC INC.
 6572  SYNTHETIC LUBRICANT TEST PROGR         0.00        0.00  ACTIVE     SABOUNGHI   DOMEX INC.
                                       ===========  ==========
                                              0.00        0.00
Total ( 12 Rec.) Pour SPONS #          =

Liste pour : SPONS #          : CA0216
--------------------------------------
PROJE  PRJT TTL                        EST $ CY     INCR$ CY    STATUS     OFF PRJT    NOM CIE
=====  ==============================  ===========  ==========  =========  ==========  ==============================
 6495  CO2 REFRIGERATION                119,500.00   71,616.00  ACTIVE     SABOUNGHI   FRIDEV-CONCOOL
 6593  HEAVY VEHICLE FUEL CONSUMPTION    64,396.96   37,396.96  ACTIVE     SABOUNGHI   FOREST ENG.RESEARCH INSTITUTE
                                       ===========  ==========
                                        183,896.96  109,012.96
Total ( 2 Rec.) Pour SPONS #           = CA0216

Liste pour : SPONS #          : CA0218
--------------------------------------
PROJE  PRJT TTL                        EST $ CY     INCR$ CY    STATUS     OFF PRJT    NOM CIE
=====  ==============================  ===========  ==========  =========  ==========  ==============================
 6617  CONDITIONNEMENT D'AIR-AUTOCARS     7,076.19    7,076.19  ACTIVE     MARSHALL    DE LEUW CATHER CANADA LTD
                                       ===========  ==========
                                          7,076.19    7,076.19
Total ( 1 Rec.) Pour SPONS #           = CA0218

Liste pour : SPONS #          : CB0222
--------------------------------------
```

3.16.4

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87/11/04 [14:52:55]                                                                                              Page 1
                                                              I   UID PROGRAM
                                                              ===============

Liste pour : SPONS #          :
---------------------------------------
PROJE  PRJT TTL                            EST $ CY     INCR$ CY    STATUS      OFF PRJT     NOM CIE
=====  ==============================  ===========  ===========  ==========  ===========  ==============================
 6282  AL/AIR BATTERY FOR VEHICLES            0.00         0.00  ACTIVE      MORGAN       ALCAN INTERNATIONAL LIMITED
                                       ===========  ===========
                                              0.00         0.00
Total ( 1 Rec.) Pour SPONS #          =


                                       ===========  ===========
                                              0.00         0.00
 *** GRAND Total( 1 Rec.) ***
```

3.16.5

```
                                                ELDERLY & HANDICAPPED PROGRAM
                                                =============================

TDC OBJECTIVES                OFF PRJT   PROJ #   TOT$AUTH    PREV.YEARS     EST$CY      EST$CY+1    INCUR$CY     TOT$ACT     SPONSOR
==============                ========   ======   ========    ==========     ======      ========    ========     =======     =======
E110 : ACCESS OF VEHICLES
------------------------------------

   COMMUTER RAIL ACCESS        SUEN       6071   126,247.00   122,397.02       0.00        0.00        0.00   122,397.02  TDPP-E&H
                                                 REMARKS : NONE.

                                                 ==========   ==========  ==========  ==========  ==========  ==========
                                                 126,247.00   122,397.02       0.00        0.00        0.00   122,397.02
   COQUILLE DE VOYAGE          SMITH B    6620    55,277.00    55,277.00       0.00        0.00        0.00    55,277.00  DGS
                                                 REMARKS : NO WORK ACCOMPLISHED IN
                                                           AUGUST DUE TO VACATIONS.

                                                 ==========   ==========  ==========  ==========  ==========  ==========
                                                  55,277.00    55,277.00       0.00        0.00        0.00    55,277.00
  CSA COMM. TRANS. FOR DISABLED NISHIZAKI 4594         0.00         0.00       0.00        0.00        0.00         0.00  TDC-O&M
                                                 REMARKS : NONE.

                                                 ==========   ==========  ==========  ==========  ==========  ==========
                                                       0.00         0.00       0.00        0.00        0.00         0.00
  ERGO ASSESSMENT MODIFIED VANS SMITH B   6701    47,640.00    47,639.66       0.00        0.00        0.00    47,639.66  TDC-EXT
                                                 REMARKS : COMPLETED.
                               SMITH B    6764   -50,500.00   -25,000.00 -22,640.00        0.00  -22,640.00   -25,000.00  OTHER TC
                                                 REMARKS : PROJECT COMPLETED.

                                                 ==========   ==========  ==========  ==========  ==========  ==========
                                                  47,640.00    47,639.66       0.00        0.00        0.00    47,639.66
```

3.16.6

```
                                                      ELDERLY & HANDICAPPED PROGRAM
                                                      =============================

TDC OBJECTIVES                         OFF PRJT   PROJ #  TOT$AUTH     PREV.YEARS    EST$CY      EST$CY+1      INCUR$CY      TOT$ACT    SPONSOR
==============                         ========   ======  ========     ==========    ======      ========      ========      =======    =======
E100 : TECH.ASSESSMENT TRANSFER &SUPP
-------------------------------------

   E&H PROGRAM TIES : TEB LTD.         SUEN        6028   19,075.05    18,949.00       0.00          0.00          0.00     18,949.00  TDPP-E&H

                                                          REMARKS : CONTRACT CLOSED.

                                                          =========    ==========  =========    ==========    ==========   ==========
                                                          19,075.05    18,949.00       0.00          0.00          0.00     18,949.00

   INFORMATION SYSTEMS ANALYSIS        RICHARD     6989   60,000.00         0.00  40,000.00     20,000.00          0.00          0.00  TDC-EXT

                                                          REMARKS : DSS REQUISITION FOR RFP IN
                                                                    PREPARATION.

                                       RICHARD     6990  -60,000.00         0.00 -40,000.00    -20,000.00          0.00          0.00  OTHER TC

                                                          REMARKS : DSS REQUISITION FOR RFP IN
                                                                    PREPARATION.

                                                          =========    ==========  =========    ==========    ==========   ==========
                                                          60,000.00         0.00  40,000.00     20,000.00          0.00          0.00

   TIES E&D PROGRAM                    SUEN        6914  150,000.00         0.00  60,000.00     75,000.00          0.00          0.00  TDC-DIM

                                                          REMARKS : PROPOSALS RECEIVED BEING
                                                                    EVALUATED.

                                                          =========    ==========  =========    ==========    ==========   ==========
                                                         150,000.00         0.00  60,000.00     75,000.00          0.00          0.00
```

TRANSPORTATION DEVELOPMENT CENTRE / CENTRE DE DEVELOPPEMENT DES TRANSPORTS

NEW PROPOSED PROJECTS

DESCRIPTION / STATUS	MODE	PROBABLE CONTRACTORS	EST $ COST	P.J.	EDTDC COMMENTS
PREPARE A BIBLIOGRAPHY WITH APPROPRIATE INDEXES ON RAIL WHEEL-SETS IN ORDER TO FACILITATE ACCESS TO INFORMATION ON THIS SUBJECT. REF. # -> 162	R	RFP	20,000	01/09 09/87	PRIORITY #2.
ADDITIONAL MOLI AND ALCAN ADVANCED BATTERY DEVELOPMENT. REF. # -> 163	U	MOLI ENERGY/ALCAN	75,000	06/87 11/87	PRIORITY #2 PROCEED USING TDC FUNDS IF ENERGY FUNDS ARE NOT AVAILABLE ($75,000).
ASSISTANCE TO HARD OF HEARING PASSENGERS IN TRANSPORTATION TERMINALS. REF. # -> 164	E	RFP	35,000	06/87 11/87	PRIORITY #2.
EVALUATION AND INTRODUCTION INTO SERVICE OF ADVANCED ELECTRIC WHEELCHAIR. REF. # -> 166	E	B.C. HYDRO	40,000	10/87	PRIORITY #2.
DEVELOP STANDARDS FOR TRANSPORTABLE WHEELCHAIR (WITH CSA). RESULTS OF WHEELCHAIR - SECUREMENT PROJECT WILL BE RELEVANT. REF. # -> 168	E	RFP	30,000	07/87 10/87	PRIORITY #2.
REVIEW AND ASSESS AVAILABLE BOARDING AND INFLIGHT	E	RFP	35,000	04/87	PRIORITY #1

3.16.7

TRANSPORTATION PROGRAM

OFF PRJT	PRJT TTL	P-TOTAL AUTH	P-TOT $ ACT	NOM CIE	STATUS	SPONS	SPONSOR CD	S-TOTAL AUTH
AUDETTE	ICE NAVIGATION SIMULATOR	185,638.00	185,617.36	INTERA TECHNOLOGIES LTD	ACTIVE	6574	CMTA-AM	77,000.10
						6782	TRNS	108,637.90
AUDETTE	STAR-VUE/MARINE VUE UPGRADE	62,952.00	62,952.00	INTERA TECHNOLOGIES LTD	ACTIVE	6724	TRNS	62,952.00
AUDETTE	SAR USE INTERACTIVE ASSISTANCE	354,000.00	0.00	INTERA TECHNOLOGIES LTD	NEGOTIAT	6944	TDC-O&M	150,000.00
						6945	TRNS	204,000.00
AUDETTE	TDC/CCIW MARINE-VUE & NAV-ICE	219,892.75	0.00	INTERA TECHNOLOGIES LTD	ACTIVE	6960	TDC-O&M	44,892.75
						6961	TRNS	150,000.00
						6962	OTHER DEPT	-25,000.00
						6963	TDC-EXT	25,000.00
AUDETTE	SONAR RETRACTABLE TRANSDUCER	490,000.00	0.00	C-TECH LTD	NEGOTIAT	6969	TDC-O&M	390,000.00
						6970	TRNS	100,000.00
AUDETTE	ICE NAVIGATION WORKSTATION	400,158.00	399,675.87	INTERA TECHNOLOGIES LTD	ACTIVE	6531	TDC-O&M	30,325.00
						6627	CMTA-AM	92,833.00
						6532	TRNS	277,000.00
AUDETTE	SONAR ASSESS ICE LOCKED CONDIT	233,543.00	233,543.00	CANARCTIC SHIPPING LTD	CMPLETED	6564	TDC-O&M	103,543.00
						6565	TRNS	130,000.00
BAYLY	ARCTIC ENVIRONMENT FACTORS	14,900.00	14,465.25	CANADIAN CLIMATE CENTRE - DOE	ACTIVE	4046	TRNS	14,900.00
BAYLY	SEGMENTED MODEL ICE TESTS II	152,439.00	152,439.00	ARCTEC CANADA LIMITED	ACTIVE	6640	TRNS	152,439.00
BAYLY	PROPELLER/ICE FE MODEL PHASE 2	307,156.26	307,132.00	MARTEC LIMITED	ACTIVE	6003	TDC-O&M	63,480.00
						6005	CMTA-AM	68,000.00
						6004	TRNS	175,676.26
BAYLY	ICE/PROP.ENGINEERING ANALYSIS	277,953.00	277,951.96	CANADIAN MARINE DRILLING LTD	ACTIVE	6460	TRNS	217,953.00
						6459	TDC-EXT	60,000.00
BAYLY	ADDED MASS AND DAMPING	215,429.00	215,428.43	ARCTEC CANADA LIMITED	ACTIVE	6637	TRNS	100,429.00
						6639	TDC-EXT	115,000.00
DIBBLE	TANK EXPLOSION SUPPRESSION	203,185.00	102,950.83	W.R. DAVIS ENGINEERING LIMITED	PRE-AMEN	6475	TDC-O&M	81,000.00
						6477	DSS	38,098.45
						6476	TRNS	84,086.55
DIBBLE	UNB TANK THERMAL ANALYSIS PH 2	153,229.00	111,948.17	UNIVERSITY OF NEW BRUNSWICK	AMENDMNT	6480	TRNS	153,229.00
GORE	ADDED MASS-SHIP ICE IMPACT	254,082.00	254,082.00	DET NORSKE VERITAS	ACTIVE	6635	DSS	141,000.00
						6633	TRNS	73,082.00
						6636	TDC-EXT	40,000.00
GORE	STEERING ICE LOADS MODELLING	160,016.00	160,012.11	ARCTEC CANADA LIMITED	CMPLETED	4877	TRNS	160,016.00
GORE	M.V. ARCTIC '86 TESTING	316,794.00	316,794.00	CANARCTIC SHIPPING LTD	CMPLETED	5799	TDC-O&M	111,794.00
						5571	TRNS	205,000.00
LAFRAMBOISE	ARCTIC SHIP TECHNOLOGY	367,155.00	367,154.49	MELVILLE SHIPPING LTD	ACTIVE	6556	CMTA-AM	100,171.69
						6555	TRNS	153,983.31
						6557	TDC-EXT	113,000.00
LAFRAMBOISE	MAQUETTE SEGMENTEE	175,000.00	0.00		APP-I-PP	6994	TRNS	175,000.00
LAFRAMBOISE	PROUES DE BRISE-GLACE	159,500.00	159,500.00	DONALD CARTER, D. SC.,	ACTIVE	6613	TDC-O&M	52,000.00
						6614	TRNS	107,500.00
LAFRAMBOISE	R&D INTO LARGE ACV DYNAMICS	249,454.00	249,453.98	UNIVERSITY OF TORONTO - UTIAS	CMPLETED	[illegible]	TRNS	249,454.00

3.16.8

9-

PRJT TTL	REGION	P-TOTAL AUTH	NOM CIE	MOD SUBJ	SPONS	SP
ICE NAVIGATION SIMULATOR	ALBERTA	185,638.00	INTERA TECHNOLOGIES LTD	MARINE	6574	CMT
					6782	TRN
ARCTIC ENVIRONMENT FACTORS	NCR(ONT)	14,900.00	CANADIAN CLIMATE CENTRE - DOE	MARINE	4046	TRN
INTEGRATED TRAFFIC SYSTEM	ONTARIO	307,835.00	IBI GROUP	URBAN	6820	CON
					6819	TDC
					6818	TDC
AERONAUTICAL TECHNOLOGY INVEST	QUEBEC	150,000.00	AVIATION PLANNING SERVICES LTD	AIR	6591	TDC
					6592	TCA
					6590	CON
					6589	TDC
GAS TURBINE CERAMICS PHASE 2	QUEBEC	75,758.00	P&W AIRCRAFT OF CANADA LTD	AIR	6146	TDC
					6147	CON
INNOVATIVE AIRCRAFT CONFIG.	QUEBEC	165,268.00	CANADAIR LIMITED	AIR	4801	CON
NACELLE AIRFLOW OPT. (PITOT)	QUEBEC	160,200.00	P&W AIRCRAFT OF CANADA LTD	AIR	6144	TDC
					6145	CON
NACELLE AIRFLOW OPT.(SCOOP)	ONTARIO	334,655.00	DE HAVILLAND AIRCRAFT CO. CAN.	AIR	6166	TDC
					6167	CON
STAR-VUE/MARINE VUE UPGRADE	ALBERTA	62,952.00	INTERA TECHNOLOGIES LTD	MARINE	6724	TRN
SAR USE INTERACTIVE ASSISTANCE	ALBERTA	354,000.00	INTERA TECHNOLOGIES LTD	MARINE	6944	TDC
					6945	TRN
SHIP ICING PHENOMENON	NCR(ONT)	49,816.00	MELVILLE SHIPPING LTD	MARINE	6700	TRN
					6770	TDC
SEGMENTED MODEL ICE TESTS II	NCR(ONT)	152,439.00	ARCTEC CANADA LIMITED	MARINE	6640	TRN
TANK EXPLOSION SUPPRESSION	ONTARIO	203,185.00	W.R. DAVIS ENGINEERING LIMITED	RAIL	6475	TDC
					6477	DSS
					6476	TRN
TDC/CCIW MARINE-VUE & NAV-ICE	UNDEF	219,892.75	INTERA TECHNOLOGIES LTD	MARINE	6960	TDC
					6961	TRN
					6962	OTH
					6963	TDC
ADDED MASS-SHIP ICE IMPACT	ALBERTA	254,082.00	DET NORSKE VERITAS	MARINE	6635	DSS
					6633	TRN
					6636	TDC
ICE BLOCKAGE OF SHROUDED PROPS	ALBERTA	165,393.00	ARCTIC RESEARCH & DEVELOPMENT	MARINE	6949	DSS
					6950	TCM
					6948	TRN
					6951	TDC
PROPULSION DYNAMICS MATH.MODEL	UNDEF	265,942.00	ARCTEC CANADA LIMITED	MARINE	6946	TDC
					6947	TRN
PROPELLER/ICE FE MODEL PHASE 2	NOVA SCO	307,156.26	MARTEC LIMITED	MARINE	6003	TDC
					6005	CMT
					6004	TRN
ADVANCED BUS SUSPENSION	ONTARIO	338,365.00	UTDC INC.	HIGHWAY	6499	TDC
					6503	DSS
					6500	CON

3.16.9

APPENDIX A - SECTION 3.17

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                        *** MENU pour SUEN            ***
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    1- REPORT ON PROJ FOR SITE VISITS       2- TIES CONTRACT INFORMATION
    3- REPORTS FOR IEA SURVEY

  Choisissez une fonction->
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PROVINCE : B.C.

PROJECT	PRJT TTL	PROJ VALUE	OFF PRJT	CONTRACTOR NAME AND ADDRESS	SITE VISIT
6773	BC MOLICELL THERMAL MGT DETAILS : BATTERIES BEING TESTED	42,441.40	MORGAN	MOLI ENERGY LIMITED 4010 MYRTLE STREET BURNABY, B.C. V5C 4G2	4010 MYRTLE STREET BURNABY BRITISH COLUMBIA V5C 4G2 BURNABY
6378	INT. TRANSPTN. COMM. SYSTEM DETAILS : UNITS OPERATING AT SKY TRAIN STATIONS IN DOWNTOWN VANCOUVER FULLY DEVELOPED UNIT AT CONTRACTOR'S OFFICE	838,526.00	MORGAN	ORACLE COMMUNICATIONS INC. 302 DISCOVERY PARK 3700 GILMORE WAY BURNABY B.C. V5G 4M1	302 DISCOVERY PARK 3700 GILMORE WAY BURNABY B.C. V5G 4M1 BURNABY
6347	VADIS AIRBORNE TECHNOLOGY DETAILS : VOICE ADVISORY DATA INFORMATION SYSTEM FOR HELICOPTER APPLICATION	57,483.00	ANNI	NORTHERN AIRBORNE TECH. LTD 1697 POWICH ROAD KELOWNA, B.C. V1X 4L1	1697 POWICK ROAD KELLOWNA BRITISH COLUMBIA V1X 4L1 KELOWNA
6348	VADIS AIRBORNE UNIT TEST DETAILS : VOICE ADVISORY DATA INFORMATION SYSTEM FOR HELICOPTER APPLICATION	70,000.00	ANNI	NORTHERN AIRBORNE TECH. LTD 1697 POWICH ROAD KELOWNA, B.C. V1X 4L1	1697 POWICK ROAD KELLOWNA BRITISH COLUMBIA V1X 4L1 KELOWNA

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                                             RAPPORT SOMMAIRE 'TIES'          87/11/04
                                             -----------------------
PROJET :  6352       E&H PROGRAM TIES :TRANSVISION       AUTH:   24,721.00     AGENT PROJ: SUEN
CIE : TRANSVISION CONSULTANTS LTD
==========================================================================================================
TIES #    TITRE                              AMNT.AUTH.   $ A DATE      BALANCE      HOLD.CUMUL  STATUT
========  =================================  ===========  ===========  ===========  ===========  ==========
CA5071                                         4,642.83     4,642.83         0.00         0.00  TERMINER
TASK 1    DATS SCHEDULING SYSTEM                   0.00         0.00         0.00       750.00  TERMINER
TASK 2    VOICE-CONTROLLED TECHNOLOGIES        5,994.50     5,994.50         0.00       600.00  TERMINER
TASK 3    EVALUATION PROJECT WORK PLAN           393.25       393.25         0.00         0.00  TERMINER
TASK 4    E&H TRANSPORT PAPER REVIEW           1,540.00     1,540.00         0.00       160.00  TERMINER
TASK 5    DEMONSTRATION PROJECTS EVAL'N       16,000.00    13,112.50     2,887.50     1,600.00  ACTIF
TASK 6    MONITOR ACCESSIBLE BUS DEMO            793.25       793.25         0.00        80.00  TERMINER

                                             ===========  ===========  ===========  ===========
                                              29,363.83    26,476.33     2,887.50     3,190.00
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3.17.2

87/11/06 [11:05:02]
1987-88

ANNEX 1

PROJECTS FUNDED BY ENERGY R&D PROGRAM INCLUDING COSPONSORS

PRJT TTL	P-TOTAL AUTH	P-EST $ CY	STATUS	AIP DATE	SIGN DT	FINALDEL	SPONS	SPONSOR CO	S-TOTAL AUTH
'SINADS'-MARINE NAVIGATION SYS	690,092.00	463,739.24	ACTIVE	86/07/03	86/11/07	88/08/31	6740	DSS	388,092.00
							6742	TCM	-62,000.00
							6739	TRNS	200,000.00
							6839	OTHER DEPT	-40,000.00
							6741	TDC-EXT	102,000.00
ADDED MASS AND DAMPING	215,429.00	1,600.57	ACTIVE	86/01/07	86/06/30	87/12/15	6637	TRNS	100,429.00
							6639	TDC-EXT	115,000.00
ADDED MASS-SHIP ICE IMPACT	254,082.00	5,622.00	ACTIVE	86/01/07	86/07/22	87/09/20	6635	DSS	141,000.00
							6633	TRNS	73,082.00
							6636	TDC-EXT	40,000.00
ADVANCED BUS SUSPENSION	338,365.00	0.00	ACTIVE	85/06/17	85/11/13	87/11/30	6499	TDC-O&M	38,365.00
							6503	DSS	100,000.00
							6500	CONS	200,000.00
AERONAUTICAL TECHNOLOGY INVEST	150,000.00	60,000.00	ACTIVE	85/09/27	86/11/10	89/03/31	6591	TDC-O&M	80,000.00
							6592	TCAV	-20,000.00
							6590	CONS	50,000.00
							6589	TDC-EXT	20,000.00
AL/AIR BATTERY FOR VEHICLES	329,728.00	0.00	ACTIVE	84/05/23	85/02/07	87/09/30	6285	TDC-O&M	110,000.00
							6284	DSS	109,728.00
							6282	LIOS	110,000.00
ALRT IMPACT VANCOUVER	150,000.00	0.00	ACTIVE	85/01/21	85/03/29	87/12/30	6402	TDC-O&M	50,000.00
							6403	CONS	100,000.00
ARCTIC ENVIRONMENT FACTORS	14,900.00	434.75	ACTIVE	78/12/31	79/07/16	87/10/31	4046	TRNS	14,900.00
ARCTIC SHIP TECHNOLOGY	367,155.00	0.00	ACTIVE	85/08/06	85/10/08	87/07/08	6556	CMTA-AM	100,171.69
							6555	TRNS	153,983.31
							6557	TDC-EXT	113,000.00
BC MOLICELL THERMAL MGT	62,441.40	10,406.90	ACTIVE	86/08/11	86/10/15	87/09/10	6773	TDC-O&M	22,441.40
							6774	LIOS	40,000.00
BULK TRAILER II PHASE II	207,486.00	0.00	ACTIVE	84/12/24	85/02/21	88/05/01	6383	DSS	150,000.00
							6384	CONS	57,486.00
CO2 REFRIGERATION	409,500.00	140,142.69	ACTIVE	85/06/12	85/11/06	89/06/31	6662	TDC-O&M	72,258.69
							6496	DSS	69,357.31
							6495	CONS	217,884.00
							6498	TDC-EXT	50,000.00
CONDITIONNEMENT D'AIR-AUTOCARS	79,814.00	11,890.19	ACTIVE	85/11/21	86/05/01	87/11/30	6616	TDC-O&M	4,814.00
							6617	CONS	75,000.00
DUAL-FUEL RAIL LOCOMOTIVE	74,600.00	63,200.00	ACTIVE	86/11/03	87/03/16	88/01/15	6832	LIOS	74,600.00
FRT TANKER TESTING METHODOLOGY	340,137.00	135,000.00	ACTIVE	85/09/03	85/12/06	88/11/01	6577	ADMFC	-200,000.00
							6575	TRNS	140,000.00
							6576	TDC-EXT	200,137.00
GAS TURBINE CERAMICS PHASE 2	75,758.00	0.00	ACTIVE	84/02/06	84/06/05	88/02/15	6146	TDC-O&M	38,258.00
							6147	CONS	37,500.00
HEAVY VEHICLE FUEL CONSUMPTION	280,000.00	64,396.96	ACTIVE	85/10/10	85/12/27	89/07/30	6593	CONS	275,000.00

3.17.3

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87/11/06 [11:06:14]
      1987-88                                                                      Pase 1
                              DSS FEES FOR ENERGY R&D PROJECTS                                           ANNEX 2

Liste pour : CSPONSOR         : CONS
------------------------------------------
PROJE PRJT TTL                       STATUS     AIP DATE SIGN DT  FINALDEL EST $ CY    TOT$AUTH
===== ============================== ========== ======== ======== ======== =========== ===========
 6928 DSS FEES CONS 1987-88          ACTIVE     87/04/01 00/00/00 00/00/00   30,000.00   30,000.00
                                                                           =========== ===========
Total ( 1 Rec.) Pour CSPONSOR         = CONS                                 30,000.00   30,000.00

Liste pour : CSPONSOR         : TRNS
------------------------------------------
PROJE PRJT TTL                       STATUS     AIP DATE SIGN DT  FINALDEL EST $ CY    TOT$AUTH
===== ============================== ========== ======== ======== ======== =========== ===========
 6927 DSS FEES ENERGY TRANS 1987-88  ACTIVE     87/04/01 00/00/00 00/00/00   50,000.00   50,000.00
                                                                           =========== ===========
Total ( 1 Rec.) Pour CSPONSOR         = TRNS                                 50,000.00   50,000.00

Liste pour : CSPONSOR         : LIOS
------------------------------------------
PROJE PRJT TTL                       STATUS     AIP DATE SIGN DT  FINALDEL EST $ CY    TOT$AUTH
===== ============================== ========== ======== ======== ======== =========== ===========
 6929 DSS FEES 1987-88               ACTIVE     87/04/01 00/00/00 00/00/00   10,000.00   10,000.00
                                                                           =========== ===========
Total ( 1 Rec.) Pour CSPONSOR         = LIOS                                 10,000.00   10,000.00

                                                                           =========== ===========
*** GRAND Total( 3 Rec.) ***                                                 90,000.00   90,000.00
```

3.17.4

ANNEX 3

```
87/11/05 [11:06:40]                                                                 Page 1
          1987-88
                                    ENERGY R&D PROJECT BY PROGRAM ELEMENTS

Liste pour : CSPONSOR          : COAL-SUPLY
-------------------------------------------
PROJE  PRJT TTL                        STATUS      AIP DATE  SIGN DT   FINALDEL  EST $ CY     TOT$AUTH
=====  ==============================  ==========  ========  ========  ========  ===========  ===========
 6815  2ND GENERATION UNIT COAL TRAIN  TERMINAT    86/09/17  87/04/01  00/00/00         0.00   233,000.00
                                                                                 ===========  ===========
                                                                                        0.00   233,000.00
Total ( 1 Rec.) Pour CSPONSOR          = COAL-SUPLY
```

3.17.5

APPENDIX A - SECTION 3.18

```
                         *** MENU pour WHITEHEAD        ***
                         -----------------------------------

        1- TECHNOLOGY APPLICATION REPORT        2- LIST OF PROJECTS BY P.O.

      Choisissez une fonction->
```

TECHNOLOGY APPLICATIONS

OFF PRJT: MARSHALL
RSPB CNTR: 257130

PRJ #	TITLE	STATUS	CSPONSOR	TOT$AUTH	INCR$CY	EST$CY	EST$CY+1	EST$FY	ACT$CY	PREV YRS
4806	PAVEMENT VEHICLE PRELIM.DESIGN	CMPLETED	TDC-O&M	111,930	0	0	0	0	0	111,930
6368	TIES-INTERCITY SURFACE (DBL)	CMPLETED	TDC-O&M	60,030	0	0	0	0	0	60,029
6486	GRAIN TERMINAL CONTROL SYSTEM	ACTIVE	TDC-O&M	100,000	0	0	100,000	0	0	0
6499	ADVANCED BUS SUSPENSION	ACTIVE	TDC-O&M	38,365	0	0	0	0	0	38,365
6500	ADVANCED BUS SUSPENSION	ACTIVE	CONS	200,000	0	0	0	0	0	200,000
6503	ADVANCED BUS SUSPENSION	ACTIVE	DSS	100,000	0	0	0	0	0	100,000
6538	TRANSFER CHAIR EVALUATION	ACTIVE	HSERD-EH	30,485	0	0	0	0	0	30,485
6616	CONDITIONNEMENT D'AIR-AUTOCARS	ACTIVE	TDC-O&M	4,814	3,000	4,814	0	0	0	0
6617	CONDITIONNEMENT D'AIR-AUTOCARS	ACTIVE	CONS	75,000	7,076	7,076	0	0	6,941	67,923
6629	ACCESSIBLE LONGER BUS STUDY	ACTIVE	TDPP-E&H	54,970	0	0	0	0	0	54,970
6717	TIES-SURFACE R&D 86/88 (DELUC)	ACTIVE	TDC-O&M	60,000	14,210	41,210	10,000	0	9,942	8,789
6728	DEMO AUTOCAR ARTIC - PHASE I	PRE-AMEN	ERDA/QUE	50,863	1,075	1,075	0	0	1,075	40,143
6787	LOW COST WEIGH-IN-MOTION SCALE	ACTIVE	TDC-O&M	52,500	31,761	31,761	0	0	0	20,738
6788	LOW COST WEIGH-IN-MOTION SCALE	ACTIVE	DSS	84,292	50,299	50,299	0	0	49,225	33,992
6816	MULTI-MODAL SAFETY STUDY	AMENDMNT	TDC-O&M	150,000	56,936	116,936	20,000	0	15,917	13,063
6817	TIES-SURFACE R&D 86/88 (DBL)	ACTIVE	TDC-O&M	30,000	1,020	18,220	4,000	0	104	7,780
6825	TRANSFER CHAIR EVALUATION	ACTIVE	TDPP-E&H	53,923	29,000	29,000	0	0	28,199	24,922
6873	MIRAGE XL LIFT INSTALLATION	ACTIVE	TDPP-E&H	209,350	130,000	209,350	0	0	0	0
6942	DEMO AUTOCAR ARTIC - PHASE II	NEGOTIAT	ERDA/QUE	2,449,000	0	736,000	1,333,100	379,900	0	0
6978	PROTOTYPE 45FT INTERCITY BUS	NEGOTIAT	TDC-O&M	160,000	0	0	160,000	0	0	0
6979	PROTOTYPE 45FT INTERCITY BUS	NEGOTIAT	CONS	160,000	0	0	160,000	0	0	0
6980	PROTOTYPE 45FT INTERCITY BUS	NEGOTIAT	TDPP-E&H	160,000	0	0	160,000	0	0	0
6981	PROTOTYPE 45FT INTERCITY BUS	NEGOTIAT	DSS	480,000	0	380,000	100,000	0	0	0
			TOTAL	4,875,524.	324,380.	1,625,744.	2,047,100.	379,900.	111,408.	813,135.
			GRAND TOTAL	4,875,524.	324,380.	1,625,744.	2,047,100.	379,900.	111,408.	813,135.

```
87/11/04 [10:57:37]                                                                                                              Page 1

Liste pour : OFF PRJT        : VESPA
             HDR SUBJ        : RAIL
_____________________________________________

PROJE FILE NO       PRJT TTL                          TOT$AUTH     TOT$INCR    EST $ CY    INCR$ CY    EST$CY+1  CSPONSOR  STATUS    NOM CIE
----- ------------  --------------------------------  ----------  ----------  ----------  ----------  ----------  --------  --------  --------------------------------
 6714 1465-425-9    BREL RAILBUS BERG-THOMPSON RAN     91,250.00   77,752.91        0.00        0.00        0.00 TDC-EXT   CMPLETED  VIA RAIL CANADA INC.
 6641 1465-425-9    BREL RAILBUS EVAL (BREL)           82,100.00   77,640.37        0.00        0.00        0.00 TDC-EXT   ACTIVE    BRITISH RAIL ENGINEERING LTD.
 6642 1465-425-9    BREL RAILBUS EVAL (VIA OPER)      198,975.00  198,975.00        0.00        0.00        0.00 TDC-EXT   ACTIVE    VIA RAIL CANADA INC.
 6993 1465-515      RAIL SAFETY STDS. APPLICATIONS          0.00        0.00        0.00        0.00        0.00 TDC-OGM   APP-I-PP  IN-HOUSE-TDT TECH.APPLICATIONS
 6517 1465-425-6    RAILBUS PROGR (DGRP/TDC AGR)       50,000.00        0.00        0.00        0.00        0.00 TDC-EXT   TERMINAT  URBAN TRANSP.DEV.CORP. - UTDC
 6897 1465-502      RAILWAY SAFETY STANDARDS STUDY          0.00        0.00        0.00        0.00        0.00 TDC-OGM   ACTIVE
 6558 1465-425-7    UTDC/HCI RAILBUS DEVELOPMENT      331,965.96        0.00        0.00        0.00        0.00 TDC-EXT   CMPLETED  UTDC INC.
 6561 1465-425-7    UTDC/HCI RAILBUS DEVELOPMENT      296,600.00   30,304.68   30,304.68   30,304.68        0.00 TDC-OGM   PRE-AMEN  UTDC INC.
 6559 1465-425-7    UTDC/HCI RAILBUS DEVELOPMENT      348,034.04  287,184.81        0.00        0.00        0.00 DSS       ACTIVE    UTDC INC.
 6996 1465-425-12   HCDS RAILBUS ON CN LINES          126,128.00  126,128.00        0.00        0.00        0.00 TDC-OGM   ACTIVE    UTDC INC.
 6997 1465-425-12   HCDS RAILBUS ON CN LINES          149,973.20  149,675.76        0.00        0.00        0.00 TDC-EXT   ACTIVE    UTDC INC.
 6979 1465-425-12   HCDS RAILBUS ON CN LINES           44,539.80   44,539.80        0.00        0.00        0.00 TDC-EXT   ACTIVE    UTDC INC.
                                                      ----------  ----------  ----------  ----------  ----------
                                                    1719,566.00  992,201.33   30,304.68   30,304.68        0.00
Total ( 12 Rec.) Pour HDR SUBJ        = RAIL

                                                      ==========  ==========  ==========  ==========  ==========
                                                    1719,566.00  992,201.33   30,304.68   30,304.68        0.00
Total ( 12 Rec.) Pour OFF PRJT        = VESPA

                                                      ==========  ==========  ==========  ==========  ==========
                                                    1719,566.00  992,201.33   30,304.68   30,304.68        0.00
 *** GRAND Total( 12 Rec.) ***
```

,2)

3.18.2

APPENDIX A - SECTION 3.19

```
                       *** MENU pour PCP              ***
                       ----------------------------------

  1- CONTROLE D'UN RAPPORT               2- RECULER D'UNE ETAPE
  3- LIE LE # PROJET AU # DE TP          4- GESTION DU 'PROJ. COMP. PHASE'
  5- CORRECTION A UNE FICHE              6- L'ARCHIVAGE D'UN RAPPORT
  7- CHERCHE un # PROJ. via le P.O.

Choisissez une fonction->
```

DE 22 - [illegible]

1455-172

87/05/29
IMC MANAGEMENT CONSULTANTS INC
10512-169 STREET, SUITE 300

EDMONTON, ALBERTA
T5P 3XG

SUBJECT: 7959E
ANIMATED GRAPHICS SIMULATION MODEL FOR AIRPORT PEDESTRIAN FLOWS

DEAR SIR/MADAM:

WE ACKNOWLEDGE RECEIPT OF THE ABOVE DRAFT REPORT. FOLLOWING A PRELIMINARY REVIEW OF THE REPORT, WE NOTE THAT THE FOLLOWING REQUIRED DOCUMENT(S) IS(ARE) MISSING:

☐ REPORT DOCUMENTATION FORM
☐ SUMMARY REPORT
☐ SUMMARY SECTION
☐ LIST OF ALL EQUIPMENT PERTAINING TO THE PROJECT AND BELONGING TO TRANSPORT CANADA
☐ OTHER --

PLEASE FORWARD THIS (THESE) ITEM(S) TO US AS SOON AS POSSIBLE SO THAT WE MAY EXPEDITE THE PROCESSING OF YOUR PROJECT.

IN THE MEANTIME, WE ARE PROCEEDING WITH A DETAILED TECHNICAL AND EDITORIAL REVIEW OF THE REPORT, WHICH WE EXPECT TO COMPLETE ON 00/00/00.

YOURS VERY TRULY,

PROJECT OFFICER

C.C. RECORD OFFICE

3.19.1

VF 26-4

1455-172

87/05/29

IMC MANAGEMENT CONSULTANTS INC
10512-169 STREET, SUITE 300

EDMONTON, ALBERTA
T5P 3X6

OBJET: TP# 7959E
ANIMATED GRAPHICS SIMULATION MODEL FOR AIRPORT
PEDESTRIAN FLOWS

MONSIEUR,

NOUS ACCUSONS RECEPTION DE L'EBAUCHE DU RAPPORT CITE EN REFERENCE.

APRES EXAMEN, NOUS AVONS CONSTATE QUE LA DOCUMENTATION SUIVANTE MANQUAIT AU DOSSIER:

- ☐ FORMULE DOCUMENTAIRE DU RAPPORT
- ☐ SOMMAIRE INTEGRE
- ☐ RAPPORT SOMMAIRE
- ☐ LISTE COMPLETE DU MATERIEL AFFERENT AU PROJET ET APPARTENANT A TRANSPORTS CANANDA
- ☐ AUTRES --

EN VUE DE REPONDRE AUX EXIGENCES DU CONTRAT ET AUX NORMES DE PUBLICATIONS DU CDT, VOUS VOUDREZ BIEN NOUS FAIRE PARVENIR CE(S) DOCUMENT(S) DANS LES PLUS BREFS DELAIS POSSIBLES AFIN DE NE PAS RETARDER LE PROCESSUS D'AVANCEMENT DU PROJET.

NOUS PROCEDONS ACTUELLEMENT A LA REVISION TECHNIQUE ET EDITORIALE DU RAPPORT; VOUS RECEVREZ SOUS PEU NOS COMMENTAIRES ET INSTRUCTIONS.

VEUILLEZ AGREER, MONSIEUR, L'EXPRESSION DE NOS SENTIMENTS DISTINGUES.

AGENT DE PROJET

C.C.:FICHIER CENTRAL

3.19.2

DE0i-5

MAILING LIST REQUEST

TO: TDC LIBRARY

FROM: RECORDS OFFICE

01455-172

87/05/29

SUBJECT: TP# 7959E
ANIMATED GRAPHICS SIMULATION MODEL FOR AIRPORT PEDESTRIAN FLOWS

PROJECT OFFICER: MARSHALL

THE ABOVE REPORT IS IN THE FINAL STAGES OF PRODUCTION.

PLEASE PROVIDE THE PROJECT OFFICER WITH A SUGGESTED MAILLING LIST, USING THE INFORMATION PROVIDED BELOW:

CONTRACTOR: IMC MANAGEMENT CONSULTANTS INC

TRANSPORTATION MODE: AIR

USER(S) OF RESULTS: UNDEF.

NUMBER OF COPIES TO BE PRINTED:
0 ENGLISH
0 FRENCH
0 BILINGUAL

3.19.3

DE 02-5

DEMANDE POUR PREPARATION DE LISTE D'ENVOI

DATE: 87/05/29

D1455-172

MARSHALL

A: BIBLIOTHEQUE

DE: FICHIER CENTRAL

OBJET: TP# 7959E
ANIMATED GRAPHICS SIMULATION MODEL FOR AIRPORT PEDESTRIAN FLOWS

LE RAPPORT CITE EN REFERENCE EST MAINTENANT EN PHASE FINALE. EN CONSEQUENCE, VEUILLEZ S'IL VOUS PLAIT PREPARER UNE LISTE D'ENVOI PRELIMINAIRE ET LA SOUMETTRE A L'AGENT DE PROJET.

CI-DESSOUS, INFORMATIONS COMPLEMENTAIRES:

CONTRACTANT: IMC MANAGEMENT CONSULTANTS INC
MODES: AERIEN

UTILISATEUR(S) DES RESULTATS: UNDEF.

NOMBRE DE COPIES A IMPRIMER:
0 ANGLAIS
0 FRANCAIS
0 BILINGUE

3.19.4

DFJ,-1

REPORT INFORMATION FORM

PROJECT NUMBER: 6552
PROJECT TITLE (sa on contract):AIRPORT PEDESTRIAN FLOW MODEL

NUMBER OF COPIES RECEIVED:_____

1. TITLE OF REPORT (review and modify title, if necessary; provide series titles, volume number and sub-title, if applicable):

----

2. TYPE OF REPORT:

☐ FINAL REPORT
☐ SUMMARY REPORT
☐ INTERIM REPORT FOR PUBLICATION
☐ PROGRESS REPORT OR OTHER WORKING DOCUMENT NOT FOR PUBLICATION

N.B. IF YOU CHECK THE LAST BOX, STOP HERE AND FOWARD THE FORM DIRECTLY TO EDITORIAL SERVICES/RECORDS OFFICES.

3. PRELIMINARY REVIEW OF REPORT

☐ ACCEPTED FOR DETAILED TECHNICAL REVIEW, OR
☐ REJECTED

(If rejected, notify contractor in writing, with copies to EDTDC and to Records Office, and advise Editorial Services by telephone. Return the form to Records Office).

4. TARGET DATE FOR DETAILED TECHNICAL REVIEW:

THE DATE AT WHICH YOU ANTICIPATE SENDING TECHNICAL AND EDITORIAL COMMENTS TO THE CONTRACTOR IS __ / __ / __ .

5. ADDITIONAL DOCUMENTS REQUIRED

REPORT DOCUMENTATION FORM(S)	☐ RECEIVED	☐ NOT RECEIVED
SUMMARY SECTION	☐ RECEIVED	☐ NOT RECEIVED

INFORMATION PROVIDED IN ITEMS 6 TO 8 WAS EXTRACTED FROM THE MIS PROJECT ENTRY FORM. PLEASE CONFIRM OR MODIFY, AS REQUIRED.

6. LANGUAGE REQUIREMENTS: UNDEF.

☐ UNCHANGED
☐ MODIFIED FOR: ____

3.19.5

[illegible]-1-2

TRANSLATION TO BE PROVIDED BY:

☐ TDC ☐ CONTRACTOR

7. REPORT DELIVERABLES:

NUMBER OF COPIES REQUIRED BY CONTRACT:

0 ENGLISH 0 FRENCH 0 BILINGUAL(summary)

☐ NO CHANGES MODIFIED FOR: _____ ENGLISH
_____ FRENCH
_____ BILINGUAL(summary)

8. OTHER DELIVERABLES:

☐ NO CHANGE
AMENDED ____
____

HAS CONTRACTOR PROVIDED A LIST OF EQUIPMENT OR MATERIAL BELONGING TO TRANSPORT CANADA, WITH COMPLETE IDENTIFICATION, LOCATION, VALUE, ETC.?

☐ YES ☐ NO ☐ NOT APPLICABLE

____________________________	____________________________
PROJECT OFFICER	DIVISION CHIEF

[illegible] -1-1

FICHE D'INFORMATION SUR LE RAPPORT

NUNERO DE PROJET: 6552
TITRE DU PROJET: AIRPORT PEDESTRIAN FLOW MODEL
NOMBRE DE COPIES RECUES:_____

1. TITRE DU RAPPORT (reviser le titre et, si necessaire, le modifier; donner, le cas echeant, titre de la serie, tomaison et sous-titre):

----

2. GENRE DU RAPPORT:

☐ RAPPORT FINAL
☐ RAPPORT SOMMAIRE
☐ RAPPORT INTERIMAIRE A ETRE PUBLIE
☐ RAPPORT D'AVANCEMENT OU AUTRE DOCUMENT DE TRAVAIL NON DESTINE A ETRE PUBLIE.

NOTE: SI VOUS AVEZ COCHE LA DERNIERE CASE, ARRETEZ ICI ET RETOURNEZ CETTE FORMULE DIRECTEMENT AU SERVICE D'EDITION/FICHIER CENTRAL.

3. EVALUATION DU RAPPORT APRES REVISION PRELIMINAIRE:

☐ ACCEPTE POUR REVISION TECHNIQUE DETAILLEE ULTERIEURE OU
☐ REFUSE

(Si refuse, avisez le contractant par ecrit avec copies au EDTDC et au Fichier central, et avisez le Service d'edition par telephone. Retournez la formule au Fichier central).

4. DELAI POUR REVISION TECHNIQUE DETAILLEE:

DATE A LAQUELLE VOUS PREVOYEZ ENVOYER LES COMMENTAIRES TECHNIQUES ET EDITORIAUX AU CONTRACTANT __ / __ / __ .

5. AUTRE DOCUMENTATION REQUISE:

RDF	☐ RECU	☐ NON RECU
SOMMAIRE INTEGRE	☐ RECU	☐ NON RECU

LES RENSEIGNEMENTS DES SECTIONS 6 A 8 ONT ETE EXTRAITS DU 'FORMULAIRE D'INSCRIPTION AU SIG'. VEUILLEZ EN VERIFIER L'EXACTITUDE ET APPORTER LES MODIFICATIONS SI NECESSAIRE.

6. EXIGENCES LINGUISTIQUES:UNDEF.

☐ INCHANGEES
☐ MODIFIEES POUR:____

3.19.6

RESPONSABLE DE LA TRADUCTION:

☐ CDT ☐ CONTRACTANT

7. RAPPORTS LIVABLES:

NOMBRE DE COPIES REQUISES SELON LE CONTRAT:

0 ANGLAIS 0 FRANCAIS 0 BILINGUE

☐ INCHANGE ☐ MODIFIE POUR: _____ ANGLAIS
_____ FRANCAIS
_____ BILINGUE

8. AUTRES PRODUITS LIVRABLES:

☐ INCHANGEE
REVISEE: ____

____

LE CONTRACTANT A-T-IL ENVOYE UNE LISTE DU MATERIEL INCLUANT LES SPECIFICATIONS SUIVANTES: LOCATION, VALEUR, ETC...

☐ OUI ☐ NON ☐ NON APPLICABLE

__________________________ AGENT DE PROJET

__________________________ CHEF DE DIVISION

Transports
Canada

Centre de développement
des transports

Complexe Guy-Favreau
200 ouest, boul. Dorchester
Suite 601, tour ouest
Montréal, Québec H2Z 1X4
Télex: 05-24713
Tél.: (514) 283-0000

Transport
Canada

Transportation
Development Centre

Guy Favreau Complex
200 Dorchester Blvd. West
Suite 601, West Tower
Montreal, Quebec H2Z 1X4
Telex: 05-24713
Tel: (514) 283-0000

Votre référence Your file

Notre référence Our file

D1455-172

87/05/28

IMC MANAGEMENT CONSULTANTS INC
10512-169 STREET, SUITE 300

EDMONTON, ALBERTA
T5P 3X6

SUBJECT: PROJECT COMPLETION
TP# 7959E
ANIMATED GRAPHICS SIMULATION MODEL FOR AIRPORT
PEDESTRIAN FLOWS

DEAR SIR/MADAM:

WE ACKNOWLEDGE RECEIPT OF PRINTED COPIES OF THE ABOVE-MENTIONED REPORT (AS WELL AS 0 COPIES OF THE SUMMARY REPORT).

TO HELP US EXPEDITE THE PROCESSING OF YOUR CONTRACT WITH TDC AND THE RELEASE OF ANY HOLDBACK PAYMENT, PLEASE SEND US:

- ANY EQUIPMENT OR MATERIAL PERTAINING TO YHE PROJECT: AUDIO-VISUAL MATERIAL, WORKING DOCUMENTS...;
- YOUR FINAL INVOICE (DSS FORM 1111, 5-83), IF NOT ALREADY SUBMITTED, AND
- YOUR CLAIM (DSS FORM 111,5-83) FOR A HOLDBACK PAYMENT.

YOUR PROMPT ATTENTION TO THIS MATTER WOULD BE APPRECIATED.

YOURS VERY TRULY,

PROJECT OFFICER

C.C. RECORDS OFFICE
TDC FINANCE

Canada

3.19.7

DF 23-8

D1455-172

87/05/28

IMC MANAGEMENT CONSULTANTS INC
10512-169 STREET, SUITE 300

EDMONTON, ALBERTA
T5P 3X6

OBJET: TERMINAISON DU PROJET
AIRPORT PEDESTRIAN FLOW MODEL
TP# 7959E
ANIMATED GRAPHICS SIMULATION MODEL FOR AIRPORT
PEDESTRIAN FLOWS

MONSIEUR,
NOUS AVONS BIEN RECU LES   0 EXEMPLAIRES DU (DES) RAPPORT(S) CITE(S) EN REFERENCE.

EN VUE DE PROCEDER A LA TERMINAISON DU PROJET ET AU PAIEMENT DES SOMMES QUI VOUS SONT DUES, NOUS VOUS PRIONS DE NOUS FAIRE PARVENIR:

- LE MATERIEL AFFERENT AU PROJET: (EX: MATERIEL AUDIO-VISUEL, DOCUMENTS DE TRAVAIL ...);
- UNE FACTURE FINALE [FORMULE MAS 1111 (5-83)] SI CELA N'A PAS DEJA ETE FAIT;
- UNE DEMANDE DE REMBOURSEMENT DES RETENUES [FORNUMLE MAS 1111 (5-83)].

NOUS ESPERONS QUE VOUS VOUDREZ BIEN APPORTER UNE ATTENTION TOUTE PARTICULIERE A CETTE DEMANDE AFIN QUE LE DOSSIER SE FERME A LA SATISFACTION DES DEUX PARTIES.

VEUILLEZ AGREER, MONSIEUR, L'ASSURANCE DE NOS SENTIMENTS LES MEILLEURS.

AGENT DE PROJET

C.C.: FICHIER CENTRAL
SERVICES DES FINANCES

3.19.8

```
                        AAA MENU pour TASSE          AAA
                        ------------------------------------

  1- Prints  PROJECTS by OFFICER.       2- MODIFIER LES DATES DRAFT/FINAL
  3- MISE A ZERO du CNTL DE DATE        4- Prints PROJ# & FILE # by PROJ#

Choisissez une fonction->
```

```
Liste pour : OFF PRJT         : POSLUNS
-----------------------------------------
PROJE  PRJT TTL                          FILE NO        NOM CIE
=====  ==============================    ============   ==========================
 6956  DIGITAL VOICE AND DATA LOGGER     1455-194       KOM INC.
 6957  DIGITAL VOICE AND DATA LOGGER     1455-194       KOM INC.
 6958  DIGITAL VOICE AND DATA LOGGER     1455-194       KOM INC.
 6959  DIGITAL VOICE AND DATA LOGGER     1455-194       KOM INC.
 6995  ELT FIELD TRIALS                  1455-189-1
 6996  ELT FIELD TRIALS                  1455-189-1
 6997  ELT FIELD TRIALS                  1455-189-1

Total ( 24 Rec.) Pour OFF PRJT           = POSLUNS


 AAA GRAND Total( 24 Rec.) AAA
->
```

3.19.9

```
Li·   pour : OFF PRJT          : POSLUNS
-------------------------------------------------
PROJE  PRJT TTL                           FILE NO        NOM CIE
=====  ================================  =============  ==========================
 6418  IN-AIR ACOUSTIC DETECT.(SODAR)     1460-224       ARCTIC SCIENCES LIMITED
 6419  IN-AIR ACOUSTIC DETECT.(SODAR)     1460-224       ARCTIC SCIENCES LIMITED
 6672  TDC COMP SYSTEM EVALUATION         1683-15        DIGI-PLUS INC.
 6713  COMM/COMP/ELEC(TIES)  DTI          1450-152       DOUSERV TELECOM INC.
 6739  'SINADS'-MARINE NAVIGATION SYS     1460-240       OFFSHORE SYSTEMS LIMITED
 6740  'SINADS'-MARINE NAVIGATION SYS     1460-240       OFFSHORE SYSTEMS LIMITED
 6741  'SINADS'-MARINE NAVIGATION SYS     1460-240       OFFSHORE SYSTEMS LIMITED
 6742  'SINADS'-MARINE NAVIGATION SYS     1460-240       OFFSHORE SYSTEMS LIMITED
 6791  WIND-SHEAR STUDY-MACDETTWILER      1455-186       MacDONALD DETTWILER & ASS
 6792  WIND SHEAR STUDY-SPAR              1455-186       SPAR AEROSPACE LTD
 6793  WIND SHEAR STUDY                   1455-186       MacDONALD DETTWILER & ASS
 6839  'SINADS'-MARINE NAVIGATION SYS     1460-240
 6859  ELT FEASIBILITY STUDY              1455-189       LEIGH INSTRUMENTS LIMITED
 6860  ELT FEASIBILITY STUDY              1455-189       LEIGH INSTRUMENTS LIMITED
 6861  ELT FEASIBILITY STUDY              1455-189       LEIGH INSTRUMENTS LIMITED
 6874  COMM/COMP/ELEC(TIES) SNC INC.      1450-152       SNC INC.
 6920  WIND-SHEAR STUDY-MACDETTWILER      1455-186       MacDONALD DETTWILER & ASS
?
```

3.19.10

APPENDIX A - SECTION 3.20

```
*** Liste des MENUS pour SGP ***
--------------------------------

            ACCES
            RAPPORT
            ETIQUETTE
            MAJ
            LISTE
```

```
                       *** MENU pour ACCES            ***
                       ----------------------------------

  1- par le NUMERO de 'TP'               2- par le NOM de l'officier
  3- par la compagnie de publicat'n      4- par un SUJET dans le TITRE
  5- ACCES VIA LE # DE CONTRAT

Choisissez une fonction->
```

```
                              FICHIER PUBLICATION
                              ===================
NUMERO DE TP   CONTRAT #     DOSSIER     STATUT     DIRECTION     BRANCHE
..........       .....    .............. ..........   .....         .....
TITRE DE LA PUBLICATION                                  ADMINISTRATION
.................................................    ...................
................................................. # REF      SECTION
.................................................  ... ...................
PUBLIE PAR (CIE)
.................................................................
NOM DE L'OFFICIER PRENOM      STATUT RPT. TYPE RPT.   REPETITIF   INTERNE
................ ..........  .......... ..........  ..........  ..........
NOM DU GESTIONAIRE   PRENOM    DATE RPT. DATE RECOM. ACCESSIBLE  SECURITE
................   ..........  ........  ........   ..........  ..........
DISPONIBLE  DATE DISP.  LOCATION            DATE APP. QT.MAXIN. QT.MINIM.
..........  ........  ................... ........    .....     .....
EMPLACEMENT  MATRICE   LIEU MAT.  REIMPRESSION  DATE REIMP.  RECU LE
..........  .......... ..........  ..........    ........     ........
NBS.FINAL  NBS.SOMM.  SOLDE D'INV.  MAILLING    MODAL SUBJ. #REQUISITION
  .....      .....       .....      ..........  .......... T8200-......

REFERENCE # DE TP ->  ..........  ..........  ..........   PF02-11/83
```

```
                       *** MENU pour RAPPORT          ***
                       ----------------------------------

  1- IMPRIME la fiche d'un 'TP'

Choisissez une fonction->
```

```
                            FICHIER PUBLICATION
                            ===================
NUMERO DE TP   CONTRAT #     DOSSIER     STATUT     DIRECTION    BRANCHE
8326E             6358  D1465-452       PUBLIE      ACD           ZCDGB
TITRE DE LA PUBLICATION                                ADMINISTRATION
TRAFFIC SIGNALS  LEFT-TURN PHASING, TIMING AND       AC
DISPLAYS, VEHICULE CLEARANCE INTERVALS             # REF     SECTION
RECOMMANDED PRACTICE                                  3 RECHERCHE#PROG.SPEC.
PUBLIE PAR (CIE)
DELEUW CATHER CANADA LTD
NOM DE L'OFFICIER PRENOM      STATUT RPT. TYPE RPT.   REPETITIF   INTERNE
SUEN              LING        FINAL       SOMMAIRE    NON         NON
NOM DU GESTIONAIRE   PRENOM    DATE RPT. DATE RECOM. ACCESSIBLE  SECURITE
SUEN                LING       87/03/01  87/09/08    OUI         PUBLIQUE
DISPONIBLE  DATE DISP.  LOCATION                   DATE APP. QT.MAXIN. QT.MINIM.
OUI         87/09/10   TDC                         87/09/08       60         6
EMPLACEMENT  MATRICE   LIEU MAT.  REIMPRESSION  DATE REIMP.  RECU LE
C-1-B       RECU      TDC          INDEF.        00/00/00    00/00/00
NBS.FINAL  NBS.SOMM.  SOLDE D'INV.  MAILLING    MODAL SUBJ. #REQUISITION
      0         60          18      INDEF.      URBAN       T8200-

REFERENCE # DE TP ->                                         PF02-11/83
```

```
                       *** MENU pour MAJ              ***
                       ----------------------------------

  1- ENTREE d'un nouveau '# de TP'       2- MODIFICATION a un 'TP'
  3- modification du # de 'TP'           4- MODIFICATION DE LA CIE
  5- MODIFICATION DE L'OFFICIER          6- MODIFICATION DU NOM DU GEST.
  7- MODIFICATION DE LA SECTION #TP      8- nouveau TP ' O.O.P. '
  9- nouveau TP ' DRAFT '               10- EFFACE UN TP 'DRAFT'
 11- MOD.->#TP 'OOP' ET 'DRAFT'         12- nouveau TP ' NOTP '
 13- verifier l'INVENDAIRE d'un TP      14- ENTREE a l'INVENTAIRE d'un TP
 15- MODIF. DU MODAL SUBJ.              16- MODIF.SUR LISTE DES ORIGINAUX
 17- POUR MODIFIER L'EMPLACEMENT        18- CREATION D'UNE SECTION
 19- MAJ D'UNE SECTION                  20- CALCULE NOMBRE PUB ENVOYEES
 21- CALCULE NOMBRE PUB. CREES

Choisissez une fonction->
```

ENTREES A L'INVENTAIRE DES ' TP '

TP NUMERO
8326E
EMPLACEMENT
C-1-8
NOM DE LA COMPAGNIE
DELEUW CATHER CANADA LTD

DESCRIPTION
TRAFFIC SIGNALS LEFT-TURN PHASING, TIMING AND DISPLAYS, VEHICULE CLEARANCE INTERVALS RECOMMANDED PRACTICE

DATE	COMMENTAIRE	SORTIE	ENTREE	SOLDE
87/09/10	RECU	0	60	60
87/09/10		14	0	46
87/09/14		21	0	25
87/09/21		1	0	24
87/09/22		2	0	22
87/09/24		1	0	21
87/10/07		1	0	20
87/10/07		1	0	19
87/10/16		1	0	18
87/11/04		1	0	17
87/11/30		1	0	16
87/11/30		0	1	17

3,20.2

```
                        *** MENU pour ETIQUETTE       ***
                        -----------------------------------

  1- CREATION D'UNE ETIQUETTE            2- MODIFICATION D'UNE ETIQUETTE
  3- EFFACER UNE ETIQUETTE               4- IMPRIMER DES ETIQUETTES
  5- LISTE DES ETIQUETTES

Choisissez une fonction->
```

```
ACCES  NOM/CIE                                     !RE LNG
=====  ========================================   =================================
  101  CISTI NATIONAL RESEARCH COUNCIL              MR   J          PARKKARI
  102  BIBLIOTHEQUE NATIONALE DU QUEBEC             MR   SERGE      BERTIN
  103  UNIVERSITE DE MONTREAL (C.R.T)               MME  S          HETU
  104  TRANSPORTATION AND ROAD RESEARCH
  105  R.T.A.C
  106  GUARDE COTIERE CANADIENNE                    MR   GILLES     BIZIER
  107  AUSTRALIAN ROAD RESEARCH BOARD               MRS  S          QUINN
  108  LIBRARIAN                                    MRS  JOY        TILLOTSON
  109  OCEAN ENGINEERING FOR COLD OCEAN
  110  JOINT PROGRAM IN TRANSPORTATION
  111  COLD REGIONS RESEARCH AND ENGINEERING        MRS  NANCY      CUMMINGS
  112  NATIONAL LIBRARY OF CANADA                   MR   S          TURNER
  113  CENTRE D'EDITION DU GVT DU CANADA
  114
->
```

```
                       *** MENU pour LISTE            ***
                       ----------------------------------

  1- exemple d'une LISTE                 2- liste des 1ERS AVIS
  3- liste des 2IEMES AVIS               4- liste des 3IEMES AVIS
  5- LISTE TP 'OOP' 'DRAFT' 'NOTP'       6- LST A PARTIR D'UNE DATE APPR.
  7- IMPRIME LISTE DES COMPAGNIES        8- LISTE DES SECTIONS
  9- IMPRIME LES 'TP' ORDONNE/# TP      10- IMPRIME LES 'TP' ORDONNE/TITRE

Choisissez une fonction->
```

```
87/12/01 [11:42:48]
                                                                                        Page 1
Liste pour : DATE APP         : 87/11/17
----------------------------------------
# DE TP      TITRE
                                                                EMPLACEM    NOM OFF             INVSO
==========   ================================================== ==========  ================    =====
8393E        DEVELOPMENT OF AN ANALYTICAL MODEL OF THE HYDRO-   A-6-E       GORE                   47
             DYNAMIC ADDED MASS OF A SHIP RAMMING ICE


Total ( 1 Rec.) Pour DATE APP         = 87/11/17

Liste pour : DATE APP         : 87/11/19
----------------------------------------
# DE TP      TITRE
                                                                EMPLACEM    NOM OFF             INVSO
==========   ================================================== ==========  ================    =====
8169E        RESONANT VIBRATION FREQUENCIES IN CONCRETE TIES    A-6-C       DIBBLE                 56


Total ( 1 Rec.) Pour DATE APP         = 87/11/19

Liste pour : DATE APP         : 87/11/20
----------------------------------------
# DE TP      TITRE
                                                                EMPLACEM    NOM OFF             INVSO
==========   ================================================== ==========  ================    =====
8781E        TANK-CAR INTERNAL SHELL EXPLOSION SUPPRESSION      A-3-F       DIBBLE                 18
             SYSTEM: PRELIMINARY THERMAL FEASIBILITY STUDY


Total ( 1 Rec.) Pour DATE APP         = 87/11/20

Liste pour : DATE APP         : 87/11/23
----------------------------------------
# DE TP      TITRE
                                                                EMPLACEM    NOM OFF             INVSO
==========   ================================================== ==========  ================    =====
8496E        THE 1985 GLOBAL ICE IMPACT TESTS ON THE USCGC      A-5-B       BAYLY                  15


Total ( 1 Rec.) Pour DATE APP         = 87/11/23

Liste pour : DATE APP         : 87/11/27
----------------------------------------
# DE TP      TITRE
                                                                EMPLACEM    NOM OFF             INVSO
==========   ================================================== ==========  ================    =====
8551F        CONSTRUCTION ET ESSAI D'UN VELOCIMETRE A           A-3-D       LAFRAMBOISE            16
             ULTRA-SONS


Total ( 1 Rec.) Pour DATE APP         = 87/11/27
```

3.20.4

```
NOM CIE
=====================================================================

 CIGGT
 INSTITUTE FOR AEROSPACE STUDIES, UNIVERSITY OF TORONTO
A.HUGH PATON
AC STATPOWER INC
ACRES CONSULTING SERVICES LTD
ADI LTDC CONSULTING
AERCOUSTICS ENGINEERING LTD.
AEROCOUSTICS ENGINEERING LTD.
AGENCE MARITIME INC
AIR BC
ALBERTA DEPT OF TRANSPORTATION
ALBERTA ECONOMIC DEVELOPMENT
ALBERY,PULLERITS,DICKSON & ASSOCIATES
ALCAN SHIPPING SERVICES LTD
ANALYTIC SYSTEM WARE LTD
ANDREW ANTENNA COMPANY LIMITED
APE ALLEN GEARS LTD
APPROVISIONEMENTS ET SERVICES CANADA
ARCTEC CANADA LTD
ARCTIC PILOT PROJECT INC
ARCTIC SCIENCES LTD
ARTEC CANADA LIMITED
ASI LTD
ASSOCIATION CANADIENNE DU CAMIONNAGE
ATARA CORPORATION
AVIATION PLANNING ASSOCIATES
AVIATION SAFETY ENGINEERING BRANCH
B C HYDRO AND POWER AUTHORITY
B C MINISTRY OF ENERGY,MINES AND PETROLEUM RESOURCES
B C RAIL
B HELM ASSOCIATES LTD
B M GUTHRIE AND W M MINER
BARKOW AND BERG
BAYLY ENGINEERING LTD
BBC BROWN BOVERI CANADA INC.
BEAUCHEMIN BEATON LAPOINTE INC
BEAUCHEMIN-BEATON-LAPOINTE INC
BEHAVIORAL SCIENCES DIVISION
BEHAVIORAL TEAM
BELL AEROSPACE CANADA TEXTRON DIVISION
BERT VAN LEEUWEN INDUSTRIAL DESIGN LTD
BEST TEST INC
BLADER ENGINEERING LTD
BOMBARDIER INC
BOSTON HENRY QUINN ASSOCIATES
BROWN BOVARY TRM INDUSTRIES INC
BRUCE MALLEN AND ASSOCIATES INC
BUREAU DE TRANSPORT METROPOLITAIN
BUREAU OF MANAGEMENT CONSULTING
C N RAIL RESEARCH CENTRE
C P CONSULTING SERVICES LTD
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3.20.5

```
87/11/26 [15:03:07]                                            Page 1
No. de Seq  SECTION
==========  ====================
         6  DPD
         8  DRPD
        10  DRSS
        11  DRSS
        13  ETUDE DE SYSTEMES
         3  RECHERCHE&PROG.SPEC.
        16  TDA
        17  TDC
        21  TECH. APPLICATIONS
         2  TECH. AVANCEE
        24  TECHNOLOGIE ACTUELLE
        28  TRANSP.SYSTEMS.DIV
->
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3.20.6

87/11/26 [16:09:44]

#9 Page 1

# DE TP	TITRE	EMPLACEM	NOM OFF	INVSO
1531E	MARINE TRANSPORTATION OF OIL & LNG FROM ARCTIC ISLANDS TO SOUTHERN MARKETS: MAIN REPORT AND APPENDIX A	C-6-E	BAYLY	0
1531E APPB	MARINE TRANSPORTATION OF OIL & LNG FROM ARCTIC ISLANDS TO SOUTHERN MARKETS: APPENDIX B	C-6-E	BAYLY	1
1531E APPC	MARINE TRANSPORTATION OF OIL & LNG FROM ARCTIC ISLANDS TO SOUTHERN MARKETS: APPENDIX C	C-6-E	BAYLY	4
1531E APPD	MARINE TRANSPORTATION OF OIL & LNG FROM ARCTIC ISLANDS TO SOUTHERN MARKETS: APPENDICES D,E,F,& G	C-6-E	BAYLY	0
1594	THE COST OF URBAN TRAVEL IN CANADA/LES COUTS DES DEPLACEMENTS URBAINS AU CANADA	A-1-A	FRAYNE	6
1644	ALGORITHM FOR THE ASSIGNMENT OF BUS DRIVERS/ UN ALGORITHME D'AFFECTATION DES CHAUFFEURS D'AUTOBUS:UN TEST A LA CTCUM	D-6-D	SUEN	6
1664F	CONSERVATION DE L'ENERGIE DANS LE TRANSPORT URBAIN DES MARCHANDISES	5B	SUEN	3
1687E	STOL DEMONSTRATION MONTREAL-OTTAWA 1974-76 II MAIN REPORT	A-1-A	MYERS	32
1688E	STOL DEMONSTRATION MONTREAL-OTTAWA 1974-76 VOLUME III DATA REPORT	A-1-C	MYERS	7
1718E	SYSTEM METHOD STUDY OF A AUTOMATED TAXI DISPATCH AND CONTROL SYSTEM OTTAWA VOL III TAXI DISPATCH REPORT SERIES	A-2-B	SUEN	12
1822E	CONBINED EPICYCLE PARALLEL SHAFT GEARBOX FOR MARINE PROPULSION TRIPLE SCREW ICEBREAKER PROJECT	A-2-B	DILLON	8
1898E	ANNOTATED BIBLIOGRAPHY ON DEMAND RESPONSIVE SCHEDULING SYSTEMS	A-2-C	SUEN	6
1928E	ADAPTATION OF A DIAL-A-RIDE OPERATIONAL ALGORITHMS TO SHARE-RIDE TAXI OPERATIONS VOL 5 OF TAXI REPORT SERIES	A-2-C	SUEN	24
1936E-78	TDC PROJECT DIRECTORY 1978	E-1-D	EGGLETON	2
1936E-79	TDC PROJECT DIRECTORY 1979	E-1-D	HANCHET	6
1936E-80	TDC PROJECT DIRECTORY 1980	E-1-D	HANCHET	8
1936E-87	TDC PROJECT DIRECTORY 9TH EDITION 1987	E-2-D	SMIT	2573
1936F-78	CDT REPERTOIRE DES PROJETS 1978	E-1-D	EGGLETON	2

3.20.7

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87/11/26 [16:09:44]
# DE TP      TITRE                                                                   #9   Page 41
                                                              EMPLACEM    NOM OFF            INVS
==========   ================================================  ==========  ================  ====
NOTP02       ACCESSIBLE COMMUTER RAIL FOR THE DISABLED :       C-6-A       SUEN
             AN EVALUATION AND DECISION-MAKING FRAMEWORK
             LAKESHORE WEST LINE TORONTO CASE STUDY W-PAPER
NOTP03       ACCESSIBILITE DES TRAINS DE BANLIEUE POUR LES     C-6-A       SUEN
             PERSONNES HANDICAPEES:UN CONTEXTE POUR L'EVALUATIO
             ETUDE DE CAS DESSERTE DE RIGAUD, MONTREAL
NOTP04       THIRD INTERNATIONAL CONFERENCE ON MOBILITY AND    TABLE       SMITH               50
             TRANSPORT OF ELDERLY AND HANDICAPPED PERSONS
             CONFERENCE PROCEEDINGS
NOTP05       COMPENDIUM INTERNATIONAL DES TRANSPORTS PUBLICS   C-3-A       MORGAN
             TRANSPORT AUTOMATIQUE GUIDE/INTERNATIONAL TRANSIT
             COMPENDIUM AUTOMATED GUIDEWAY TRANSIT
NOTP06       ARCTIC DEPLOYMENT OF USCGC POLAR SEA WINTER 1983  C-6-E       BAYLY
             VOLUME 2 : ENVIRONMENTAL DATA

NOTP07       ARCTIC DEPLOYMENT OF USCGC POLAR SEA WINTER 1983  C-6-E       BAYLY
             VOLUME 4 : INSTRUMENTATION SYSTEM AND COMPUTER
             SOFTWARE DOCUMENTATION
NOTP08       ARCTIC DEPLOYMENT OF USCGC POLAR SEA WINTER 1983  C-6-E       BAYLY
             VOLUME 1 : EXECUTIVE SUMMARY

NOTP09       ARCTIC DEPLOYMENT OF USCGC POLAR SEA WINTER 1983  C-6-E       BAYLY
             VOLUME 3 : TRAFFICABILITY TESTS

----------   ------------------------------------------------  0           N/A                 (
             ------------------------------------------------
             ------------------------------------------------
```

APPENDIX A - SECTION 4.1

```
*** Liste des MENUS pour G87 ***
--------------------------------

          PAYROLL
          LISTE
          MAJ
          ANTOINE
          RAPPORT
          CONFEREN
```

```
                    *** MENU pour MAJ                ***
                    ----------------------------------

  1- initialisation du MOIS              2- entrees au GRAND LIVRE
  3- CORRECTION au FONDS ETRANGES        4- TOTALISER LES CHARGE FINANCIER
  5- MODIFICATION a un BUDGET            6- MODIFICATION DU KILOMETRAGE
  7- ENTREE LES BUDGETS/L'ANNEE          8- MODIFIER LE NOM DE L'ART.ORG
  9- MODIFICATION a une TRANSACTION     10- CREATION BUDGET ET ART.ORG.
 11- entree de la CHARGE FINANCIERE     12- EXTENSION des BUDGETS/MOIS,-:F
 13- VERIFICATION DES TRANSACTIONS      14- voir les charges financieres
 15- voir une TRANSACTION               16- VOIR un BUDGET

Choisissez une fonction ->
```

```
87/10/28 [ 11:26:34]                                                   Page 1
          EXTENSION DES BUDGETS POUR NOVEMBRE 8

LE BUDGET # 3700DU CENTRE # 257140ETAIT DE -->$      2,300.00LE BUDGET DU MOIS -->       200.00IL EST MAINTENANT DE -->$     2,5
LE BUDGET # 4100DU CENTRE # 257140ETAIT DE -->$      1.500.00LE BUDGET DU MOIS -->         0.00IL EST MAINTENANT DE -->$     1,5
LE BUDGET # 4200DU CENTRE # 257140ETAIT DE -->$     11.500.00LE BUDGET DU MOIS -->     1,700.00IL EST MAINTENANT DE -->$    13,2
LE BUDGET # 4700DU CENTRE # 257140ETAIT DE -->$      6.500.00LE BUDGET DU MOIS -->     1,000.00IL EST MAINTENANT DE -->$     7,5
LE BUDGET # 4800DU CENTRE # 257140ETAIT DE -->$     45,000.00LE BUDGET DU MOIS -->     6,000.00IL EST MAINTENANT DE -->$    51,0
LE BUDGET # 4900DU CENTRE # 257140ETAIT DE -->$      3,000.00LE BUDGET DU MOIS -->       500.00IL EST MAINTENANT DE -->$     3,5
LE BUDGET # 7800DU CENTRE # 257140ETAIT DE -->$        600.00LE BUDGET DU MOIS -->       100.00IL EST MAINTENANT DE -->$       7
LE BUDGET # 0100DU CENTRE # 257150ETAIT DE -->$    158.654.00LE BUDGET DU MOIS -->    31,730.00IL EST MAINTENANT DE -->$   190,3
LE BUDGET # 0200DU CENTRE # 257150ETAIT DE -->$        900.00LE BUDGET DU MOIS -->         0.00IL EST MAINTENANT DE -->$       9
LE BUDGET # 0800DU CENTRE # 257150ETAIT DE -->$     12,000.00LE BUDGET DU MOIS -->     2,000.00IL EST MAINTENANT DE -->$    14,0
LE BUDGET # 2000DU CENTRE # 257150ETAIT DE -->$      3.000.00LE BUDGET DU MOIS -->         0.00IL EST MAINTENANT DE -->$     3,0
LE BUDGET # 2300DU CENTRE # 257150ETAIT DE -->$    390,000.00LE BUDGET DU MOIS -->    90,000.00IL EST MAINTENANT DE -->$   480,0
LE BUDGET # 7800DU CENTRE # 257150ETAIT DE -->$        400.00LE BUDGET DU MOIS -->         0.00IL EST MAINTENANT DE -->$       4
```

Extension des budgets - Novembre '87

4.1.1

```
87/10/28 [ 11:26:59]                                                   Page 1
charg  budget           bgt/cum
=====  ==============   ==============
    9            0.00             0.00
 1010    2,117,000.00     1,428,780.00
 1018            0.00             0.00
 1020    5,245,700.00     2,915,400.00
 1023            0.00             0.00
 1070            0.00             0.00
 1080            0.00             0.00
 1260            0.00             0.00
 2099            0.00             0.00
 3010            0.00             0.00
 3310            0.00             0.00
 3320            0.00             0.00
 3330            0.00             0.00
 3770            0.00             0.00
 3820    2,450,000.00     1,120,000.00
 7240            0.00             0.00
 7250            0.00             0.00
 7270            0.00             0.00
 8110            0.00             0.00
 9100            0.00             0.00
 9510            0.00             0.00
 9520            0.00             0.00
 9610            0.00             0.00
       ==============   ==============
         9,812,700.00     5,464,180.00
*** GRAND Total( 23 Rec.) ***
```

4.1.2

```
7/10/28 [ 11:27:02]                                              Page 1

.ste pour : charge #          :  1010
--------------------------------------
ntre  budg  budget $
====  ====  ==============
57100  0100       75,076.00
57110  0100      261,000.00
57110  0200        1,300.00
57120  0100      220,848.00
7120  0200          900.00
57130  0100      213,848.00
7130  0200          600.00
7140  0100      462,924.00
7140  0200        1,000.00
57150  0100      190,384.00
7150  0200          900.00
            ==============
              1,428,780.00 ✓
tal ( 11 Rec.) Pour charge #          =  1010


ste pour : charge #          :  1020
--------------------------------------
ntre  budg  budget $
====  ====  ==============
7100  0800        6,000.00
7100  2000        2,000.00
7100  2300       20,000.00
7100  2400      168,000.00
7100  7800          300.00
7110  0800       22,000.00
7110  2000        4,000.00
7110  2300      510,000.00
7110  7800          200.00
7120  0800       19,500.00
7120  2000        2,500.00
7120  2300      730,000.00
7120  7800          200.00
7130  0800       11,500.00
7130  2000        2,500.00
7130  2300      300,000.00
```

```
87/10/28 [ 11:27:02]                                          Page 2

Liste pour : charge #          :  1020
-------------------------------------
centre  budg  budget $
======  ====  ==============
257130  7800          300.00
257140  0800       16,000.00
257140  1000       13,000.00
257140  1100       53.000.00
257140  1300        3,000.00
257140  1400       30,000.00
257140  2000        7,000.00
257140  2300      350,000.00
257140  2400       32,000.00
257140  2500        9,400.00
257140  3400        5.700.00
257140  3500       20,000.00
257140  3700        2,500.00
257140  4100        1.500.00
257140  4200       13,200.00
257140  4700        7,500.00
257140  4800       51,000.00
257140  4900        3,500.00
257140  7800          700.00
257150  0800       14,000.00
257150  2000        3,000.00
257150  2300      480,000.00
257150  7800          400.00
              ==============
                2,915,400.00 ✓ ok
Total ( 39 Rec.) Pour charge #          =  1020

Liste pour : charge #          :  3820
-------------------------------------
centre  budg  budget $
======  ====  ==============
257120  7200      140,000.00
257130  7200      980,000.00
              ==============
                1,120,000.00 ok
Total ( 2 Rec.) Pour charge #           =  3820

              ==============
                5,464,180.00
 *** GRAND Total( 52 Rec.) ***
```

```
charg  budget            cumul             bgt/cum
=====  ==============    ==============    ==============
 1010    2,117,000.00      1,095,319.11      1,205,438.00
 1018            0.00         22,676.09              0.00
 1020    5,245,700.00      1,271,576.50      2,423,900.00
 1023            0.00              0.00              0.00
 1070            0.00              0.00              0.00
 1080            0.00              0.00              0.00
 1260            0.00              0.00              0.00
 2099            0.00          4,827.78              0.00
 3010            0.00              0.00              0.00
 3310            0.00              0.00              0.00
 3320            0.00              0.00              0.00
 3330            0.00              0.00              0.00
 3770            0.00              0.00              0.00
 3820    2,450,000.00        107,934.80        750,000.00
 4500            0.00              0.00              0.00
 7240            0.00           -121.94              0.00
 7250            0.00              0.00              0.00
 7270            0.00              0.00              0.00
 8110            0.00            750.00              0.00
 9100            0.00     -1,300,116.81              0.00

?
```

4.1.3

APPENDIX A - SECTION 4.2

```
                        *** MENU pour LISTE              ***
                        ----------------------------------------

  1- CNTL des AVANCES des SALAIRES        2- feuille du GRAND LIVRE
  3- LISTE DES CENTRES RSFB/ARTICLE       4- IMPRES. d'une TRANS. CORRIGEE
  5- etat DETAILLE par LOTS               6- initialisation du MOIS
  7- DERNIERES transactions DEPUIS        8- LIQUIDATION DES CHARGES
  9- DEPENSE CUMULATIVE pour leMOIS      10- LISTE DES KILOMETRAGES
 11- LISTE # ART.ORG/# BUDGET/#CFI       12- CNTL des AVANCES DE VOYAGE
 13- donne le SOLDE DES CHARGES          14- STATUTS DES FONDS PAR CENTRES

Choisissez une fonction ->
```

MENU. LISTE

①

```
87/11/03 ( 08:36:47)                                                                Page 1
              CONTROLE DES AVANCES DE SALAIRES     POUR : 03 NOV 87

              ================================


Liste pour : centre              : 257130
             article             : 0153
----------------------------------------
date      a.p.v  notes                  montant          dep/cum         cum/cfi
========  =====  ====================  ==============  ==============  ==============
87/05/19  50132  ERIC BROWN                    480.00       50,567.19      338,936.28
87/06/05  CHEQ   REMB.E.BROWN-A.SAL.          -480.00       60,565.23      425,115.18
87/09/21  50766  HIEP.LE THANH                 556.00      121,953.96      765,429.59
87/10/05         LE THANH H                   -556.00      143,233.46    1,139,036.34
                                        ==============
                                                 0.00
Total ( 4 Rec.) Pour article          = 0153


Liste pour : centre              : 257130
             article             : 0154
----------------------------------------
date      a.p.v  notes                  montant          dep/cum         cum/cfi
========  =====  ====================  ==============  ==============  ==============
87/03/05  CHEQ   MARSHALL                    2,456.70       39,581.39      251,811.37
87/06/26  CHEQ   B.MARSHALL                 -1,228.36       80,351.52      593,228.56
87/07/27         B. MARSHALL                -1,185.23       90,163.81      699,960.89
87/08/03         B MARSHALL                    -43.11      100,907.51      760,051.87
87/08/25         B.MARSHALL                    -43.11      113,974.15      907,410.86
87/09/03         B.MARSHALL AJUST.              43.11      120,858.22      969,789.98
                                        ==============
                                                -0.00
Total ( 6 Rec.) Pour article          = 0154

                                        ==============
                                                -0.00
Total ( 10 Rec.) Pour centre          = 257130
```

4.2.1

```
87/11/03 [ 08:38:47]                                                              Page 3
              CONTROLE DES AVANCES DE SALAIRES     POUR : 02 NOV 87

              ================================

Liste pour : centre              : 257150
             article             : 0153
----------------------------------------
date      a.p.v  notes                  montant         dep/cum         cum/cfi
========  =====  ====================   ==============  ==============  ==============
87/05/05  50049  CHARLES RIVET                  818.00       31,481.33      248,754.67
87/05/14  CHEQ   CHARLES RIVET                 -818.00       46,265.36      338,456.28
                                        ==============
                                                  0.00
Total ( 2 Rec.) Pour article            = 0153

                                        ==============
                                                  0.00
Total ( 2 Rec.) Pour centre             = 257150

                                        ==============
                                              1,221.73
 *** GRAND Total( 15 Rec.) ***
```

menu. liste

②

```
87/10/27 [ 13:46:24]                                                                    Page 1
          TRANSACTION DU MOIS COURANT          TERMINANT LE : 27 OCT 87

         ===========================

Liste pour : centre          : 257100
             article         : 0104
---------------------------------------
date     a.p.v notes               charg montant        bgt/cum        dep/cum        cum/cfi
======== ===== ==================== ===== ============== ============== ============== ==============
87/10/05 CHEQU PAYLIST              1010       6,572.03      64,231.00      85,893.35   1,060,701.79
87/10/13       P.EGGLETON RECUP.    1010     -36,352.23      64,231.00      49,577.88   1,102,684.11
87/10/13 CHEQU PAYLIST              1010       6,572.03      64,231.00      56,149.91   1,101,891.14
87/10/27 CHEQU PAYLIST              1010       6,572.03      64,231.00      62,758.70   1,163,971.05
                                         ==============
                                             -16,636.14
Total ( 4 Rec.) Pour article       = 0104

Liste pour : centre          : 257100
             article         : 0165
---------------------------------------
date     a.p.v notes               charg montant        bgt/cum        dep/cum        cum/cfi
======== ===== ==================== ===== ============== ============== ============== ==============
87/10/05 CHEQU PAYLIST              1010          36.76      64,231.00      85,930.11   1,060,738.55
87/10/13 CHEQU PAYLIST              1010          36.76      64,231.00      56,186.67   1,101,927.90
87/10/27 CHEQU PAYLIST              1010          36.76      64,231.00      62,795.46   1,164,007.81
                                         ==============
                                                 110.28
Total ( 3 Rec.) Pour article       = 0165

Liste pour : centre          : 257100
             article         : 0459
---------------------------------------
date     a.p.v notes               charg montant        bgt/cum        dep/cum        cum/cfi
======== ===== ==================== ===== ============== ============== ============== ==============
87/10/13       P.EGGLETON RCUP.     1010       5,065.00           0.00      10,840.00   1,107,749.11
87/10/13       P.EGGLETON           1010      -5,065.00           0.00       5,775.00   1,102,684.11
87/10/13       P.EGGLETON RECUP.    1010      -5,065.00           0.00         710.00   1,097,619.11
                                         ==============
                                              -5,065.00
Total ( 3 Rec.) Pour article       = 0459
```

4.2.2

```
         TRANSACTION DU MOIS COURANT          TERMINANT LE : 27 OCT 87

        ==========================

Liste pour : centre             : 257150
             article            : 0903
---------------------------------------
date     a.p.v notes                charg montant        bgt/cum        dep/cum        cum/cfi
======== ===== ==================== ===== ============== ============== ============== ==============
87/10/19 50922 M.STENSON             1020         400.00           0.00       1,049.50   1,413,455.28
                                          ==============
                                                  400.00
Total ( 1 Rec.) Pour article        = 0903


Liste pour : centre             : 257150
             article            : 2023
---------------------------------------
date     a.p.v notes                charg montant        bgt/cum        dep/cum        cum/cfi
======== ===== ==================== ===== ============== ============== ============== ==============
87/10/19 50933 R.S.NISHIZAKI         1020         235.00       3,000.00         365.00   1,409,003.81
87/10/27 50996 J.G RICHARD           1020         165.00       3,000.00         792.92   1,441,335.68
                                          ==============
                                                  400.00
Total ( 2 Rec.) Pour article        = 2023


Liste pour : centre             : 257150
             article            : 2024
---------------------------------------
date     a.p.v notes                charg montant        bgt/cum        dep/cum        cum/cfi
======== ===== ==================== ===== ============== ============== ============== ==============
87/10/27 50997. I.BAYLY              1020         262.92       3,000.00         627.92   1,441,870.68
                                          ==============
                                                  262.92
Total ( 1 Rec.) Pour article        = 2024


Liste pour : centre             : 257150
             article            : 2398
---------------------------------------
date     a.p.v notes                charg montant        bgt/cum        dep/cum        cum/cfi
======== ===== ==================== ===== ============== ============== ============== ==============
87/10/19 50939 NUNASI CORPORATION    1020      22,000.00     390,000.00     116,897.40   1,457,075.93
```

```
Total ( 1 Rec.) Pour article          = 2398

                                                ==============
                                                     81,002.36
Total ( 49 Rec.) Pour centre           = 257150

                                                ==============
                                                    478,829.48
  *** GRAND Total( 399 Rec.) ***
```

```
87/10/27 [ 14:32:57]                                                    Page 1
                       LISTES DES CENTRES DE RESPONSABILITES PAR ARTICLE ORGANIQUE


Liste pour : article          : 0101
-------------------------------------
centre  cumul
======  ==============
257100            0.00
257110            0.00
257120            0.00
257130            0.00
257140            0.00
257150            0.00
        ==============
                  0.00
Total ( 6 Rec.) Pour article            = 0101

Liste pour : article          : 0102
-------------------------------------
centre  cumul
======  ==============
257100            0.00
257110            0.00
257120            0.00
257130            0.00
257140            0.00
257150            0.00
        ==============
                  0.00
Total ( 6 Rec.) Pour article            = 0102

Liste pour : article          : 0103
-------------------------------------
centre  cumul
======  ==============
257100            0.00
257110            0.00
```

4.2.3

```
                      LISTES DES CENTRES DE RESPONSABILITES PAR ARTICLE ORGANIQUE


Liste pour : article          : 9913
------------------------------------
centre  cumul
======  ==============
257120            0.00
257130            0.00
257140            0.00
257150            0.00
        ==============
                  0.00
Total ( 6 Rec.) Pour article          = 9913

Liste pour : article          : 9920
------------------------------------
centre  cumul
======  ==============
257100            0.00
257110            0.00
257120            0.00
257130            0.00
257140            0.00
257150            0.00
        ==============
                  0.00
Total ( 6 Rec.) Pour article          = 9920

Liste pour : article          : 9921
------------------------------------
centre  cumul
======  ==============
257130            0.00
257130            0.00
        ==============
                  0.00
Total ( 2 Rec.) Pour article          = 9921

        ==============
          1,449,102.09
```

```
87/11/03 [ 09:08:44]                                                                                Page 1
                                       CORRECTION AU GL

                                       ================

Liste pour : centre                    : 257100
             article                   : 0650
----------------------------------------------
date       a.p.v  charg  batch  notes                  montant        dep/cum        cum/cfi
========   =====  =====  =====  ====================   ============== ============== ==============
87/11/03   TEST    1020      0  TEST                             0.00       4,983.09   1,490,446.75
                                                       ==============
                                                                 0.00
Total ( 1 Rec.) Pour article          = 0850


                                                       ==============
                                                                 0.00
Total ( 1 Rec.) Pour centre           = 257100


                                                       ==============
                                                                 0.00
 *** GRAND Total( 1 Rec.) ***
```

4.2.4

```
87/11/02 [ 14:05:32]                                            Page 1
ETAT DETAILLE DES TRANSACTIONS PAR LOTS     TERMINANT LE : 2 NOVEMBRE
=======================================
Liste pour : batch#           :     1
             article          : 4806
-------------------------------------
date      notes                 centre  activ  contr  a.p.v  montant
========  ====================  ======  =====  =====  =====  ==============
87/11/02  AMERICAN TRUCKING     257140   4100      0  51022           22.27
                                                             ==============
                                                                      22.27

Total ( 1 Rec.) Pour article          = 4806

Liste pour : batch#           :     1
             article          : 4808
-------------------------------------
date      notes                 centre  activ  contr  a.p.v  montant
========  ====================  ======  =====  =====  =====  ==============
87/11/02  H.W.WILSON            257140   4100      0  51023          265.93
                                                             ==============
                                                                     265.93

Total ( 1 Rec.) Pour article          = 4808

                                                             ==============
                                                                     288.20
Total ( 2 Rec.) Pour batch#           =     1
```

4.2.5

```
87/11/02 [ 14:05:32]                                                    Page 7
ETAT DETAILLE DES TRANSACTIONS PAR LOTS      TERMINANT LE : 2 NOVEMBRE
======================================
Liste pour : batch#          :     4
             article         : 0802
--------------------------------------
date      notes                 centre  activ  contr  a.p.v  montant
========  ====================  ======  =====  =====  =====  ==============
87/11/02  HOWARD FOSLUNS        257120   4100      0  51052           43.40
87/11/02  JOHN H.MORGAN         257140   4100      0  51051          151.75
87/11/02  MAURICE AUDETTE       257120   4100      0  51050           67.25
87/11/02  N.E.RUDBACK           257100   4100      0  51049           72.95
87/11/02  N.E.RUDBACK           257100   4100      0  51048           35.94
87/11/02  DOUGLAS W.DIBBLE      257110   4100      0  51046           67.45
87/11/02  MARCEL THERRIEN       257140   4100      0  51045          139.89
                                                             ==============
                                                                     628.55
Total ( 7 Rec.) Pour article          = 0802


Liste pour : batch#          :     4
             article         : 0850
--------------------------------------
date      notes                 centre  activ  contr  a.p.v  montant
========  ====================  ======  =====  =====  =====  ==============
87/11/02  LING SUEN             257140   4100   2249  51047          300.00
87/11/02  MARCEL THERRIEN       257140   4100   1893  51045         -150.00
                                                             ==============
                                                                     150.00
Total ( 2 Rec.) Pour article          = 0850


Liste pour : batch#          :     4
             article         : 3210
--------------------------------------
date      notes                 centre  activ  contr  a.p.v  montant
========  ====================  ======  =====  =====  =====  ==============
87/11/02  MARCEL THERRIEN      .257140   4100      0  51045           42.75
                                                             ==============
                                                                      42.75
Total ( 1 Rec.) Pour article          = 3210


                                                             ==============
                                                                     821.43   ok
Total ( 10 Rec.) Pour batch#           =     4


                                                             ==============
                                                                  39,193.92
 *** GRAND Total( 34 Rec.) ***
```

```
87/11/02 [ 13:44:02]                                                                       Page 1
                          TRANSACTIONS

                          ============


Liste pour : centre           : 257100
             article          : 0802
---------------------------------------
date      a.p.v  charg  batch  notes                 montant         dep/cum          cum/cfi
========  =====  =====  =====  ====================  ==============  ==============  ==============
87/11/02  51049   1020      4  N.E.RUDBACK                    72.95        4,947.10    1,464,749.80
87/11/02  51048   1020      4  N.E.RUDBACK                    35.99        4,983.09    1,464,765.79
                                                     ==============
                                                             108.94
Total ( 2 Rec.) Pour article         = 0802

                                                     ==============
                                                             108.94
Total ( 2 Rec.) Pour centre          = 257100
```

4.2.6

```
87/11/02 [ 13:44:02]                                                                          Page 9
                          TRANSACTIONS

                          ============


Liste pour : centre             : 257150
             article            : 0101
--------------------------------------------
date     a.p.v  charg  batch  notes                     montant         dep/cum         cum/cfi
======== =====  =====  =====  ====================  ==============  ==============  ==============
87/11/02         1010      0  J.G.RICHARD                 1,075.76      198.567.67    1.244,026.56
87/11/02         1010      0  J.G.RICHARD                -1,075.76      197,491.91    1,242,950.80
87/11/02         1020      0                                  0.00            0.00            0.00
                                                    ==============
                                                              0.00

Total ( 3 Rec.) Pour article            = 0101


Liste pour : centre             : 257150
             article            : 0402
--------------------------------------------
date     a.p.v  charg  batch  notes                     montant         dep/cum         cum/cfi
======== =====  =====  =====  ====================  ==============  ==============  ==============
87/11/02         1010      0  J.G.RICHARD                 1,075.76        1,075.76    1,244,026.56
                                                    ==============
                                                          1,075.76

Total ( 1 Rec.) Pour article            = 0402

                                                    ==============
                                                          1,075.76

Total ( 4 Rec.) Pour centre             = 257150

                                                    ==============
                                                         40,265.92

 *** GRAND Total( 39 Rec.) ***
```

```
87/11/02 [ 14:04:53]                                         Page 1
LIQUIDATION DES CHARGES FINANCIERES     TERMINANT LE : 2 NOVEMBRE

===================================

charg  cumul
=====  ==============
 1010    1,244,026.56
 1018       28,156.64
 1020    1,490,446.75
 1023            0.00
 1070            0.00
 1080            0.00
 1260            0.00
 2099            0.00
 3010            0.00
 3310            0.00
 3320            0.00
 3330            0.00
 3770            0.00
 3820      121,092.66
 7240         -121.94
 7250            0.00
 7270            0.00
 8110          750.00
 9510            0.00
 9520            0.00
       ==============
         2,884,350.67
 *** GRAND Total( 20 Rec.) ***
```

4.2.7

```
charg  cumul
=====  ==============
 9100   -1,293,718.99
 9610      -95,575.20
       ==============
        -1,389,294.19
 *** GRAND Total( 2 Rec.) ***
```

```
87/10/27 [ 14:08:22]                                                    Page 1
     SOMMAIRES DU G.L. PAR CENTRE DE RESPONSABILITE     POUR LE MOIS : OCT 87

     ===============================================

Liste pour : centre           : 257100
             article          : 01
---------------------------------------
arti  budget $        cumul           cumul/m
====  ==============  ==============  ==============
0101       64,231.00            0.00            0.00
0102       64,231.00            0.00            0.00
0103       64,231.00            0.00            0.00
0104       64,231.00       62,233.03      -16,636.14
0153       64,231.00            0.00            0.00
0154       64,231.00            0.00            0.00
0156       64,231.00            0.00            0.00
0165       64,231.00          562.43          110.28
01ST            0.00            0.00            0.00
      ==============  ==============  ==============
          513,848.00       62,795.46      -16,525.86
Total ( 9 Rec.) Pour article          = 01

Liste pour : centre           : 257100
             article          : 02
---------------------------------------
arti  budget $        cumul           cumul/m
====  ==============  ==============  ==============
0201            0.00            0.00            0.00
      ==============  ==============  ==============
                0.00            0.00            0.00
Total ( 1 Rec.) Pour article          = 02

Liste pour : centre           : 257100
             article          : 03
---------------------------------------
arti  budget $        cumul           cumul/m
====  ==============  ==============  ==============
0301            0.00            0.00            0.00
      ==============  ==============  ==============
                0.00            0.00            0.00
Total ( 1 Rec.) Pour article          = 03
```

4.2.8

```
87/10/27 ( 14:08:22)                                                   Page 48
     SOMMAIRES DU G.L. PAR CENTRE DE RESPONSABILITE    POUR LE MOIS : OCT 97

     ==============================================


Liste pour : centre             : 257150
             article            : 95
--------------------------------------
arti  budget $       cumul           cumul/m
====  ============== ==============  ==============
9595            0.00         150.00            0.00
      ============== ==============  ==============
                0.00           0.00            0.00
Total ( 2 Rec.) Pour article          = 95

Liste pour : centre             : 257150
             article            : 96
--------------------------------------
arti  budget $       cumul           cumul/m
====  ============== ==============  ==============
9631            0.00    -291,465.92            0.00
9632            0.00     291,480.18            0.00
9651            0.00     -93,349.05            0.00
9652            0.00     138,325.02            0.00
      ============== ==============  ==============
                0.00      47,980.23            0.00
Total ( 4 Rec.) Pour article          = 96

Liste pour : centre             : 257150
             article            : 99
--------------------------------------
arti  budget $       cumul           cumul/m
====  ============== ==============  ==============
9901            0.00           0.00            0.00
9902            0.00           0.00            0.00
9903            0.00           0.00            0.00
9911            0.00           0.00            0.00
9912            0.00           0.00            0.00
9913            0.00           0.00            0.00
      ============== ==============  ==============
                0.00           0.00            0.00
Total ( 6 Rec.) Pour article          = 99

      ============== ==============  ==============
        3,345,840.00     373,083.55       81,002.36
Total ( 78 Rec.) Pour centre           = 257150
```

```
87/10/27 [ 14:23:25]                                          Page 1

Liste pour : centre          : 257100
             article         : 96
-----------------------------------------
arti  cumul
====  ==============
9698            0.00
      ==============
                0.00
Total ( 1 Rec.) Pour article            = 96

Liste pour : centre          : 257100
             article         : 99
-----------------------------------------
arti  cumul
====  ==============
9920            0.00
      ==============
                0.00
Total ( 1 Rec.) Pour article            = 99

      ==============
                0.00
Total ( 2 Rec.) Pour centre             = 257100

Liste pour : centre          : 257110
             article         : 96
-----------------------------------------
arti  cumul
====  ==============
9693     -363,031.24
      ==============
         -363,031.24
Total ( 1 Rec.) Pour article            = 96

Liste pour : centre          : 257110
             article         : 99
-----------------------------------------
arti  cumul
====  ==============
9920            0.00
      ==============
Liste pour : centre            : 257140
             article           : 96
--------------------------------------
arti  cumul
====  ==============
9698     -114,572.80
      ==============
         -114,572.80
Total ( 1 Rec.) Pour article          = 96

Liste pour : centre            : 257140
             article           : 99
--------------------------------------
arti  cumul
====  ==============
9920            0.00
      ==============
                0.00
Total ( 1 Rec.) Pour article          = 99

      ==============
         -114,572.80
Total ( 2 Rec.) Pour centre           = 257140

Liste pour : centre            : 257150
             article           : 96
--------------------------------------
arti  cumul
====  ==============
9698     -267,499.49
      ==============
         -267,499.49
Total ( 1 Rec.) Pour article          = 96

Liste pour : centre            : 257150
             article           : 99
--------------------------------------
arti  cumul
====  ==============
9920            0.00
      ==============
                0.00
Total ( 1 Rec.) Pour article          = 99

      ==============
         -267,499.49
Total ( 2 Rec.) Pour rentre           = 257150
```

```
87/11/03 [ 10:45:02]                                            Page 1

Liste pour : article           : 0801
--------------------------------------------
date      centre  a.p.v  notes                 kilome
========  ======  =====  ====================  ======
87/08/25  257130  50700  D.WHITEHEAD              790


Total ( 1 Rec.) Pour article          = 0801


Liste pour : article           : 0802
--------------------------------------------
date      centre  a.p.v  notes                 kilome
========  ======  =====  ====================  ======
87/04/16  257100  50003  N.E. RUDBACK             400
87/04/27  257120  50020  B.MARTEL                  25
87/05/05  257130  50041  L.SABOUNGHI              580
87/05/12  257130  50127  D.WHITEHEAD              400
87/05/25  257100  50176  N.E.RUDBACK              200
87/06/03  257100  50227  N.E.RUDBACK              446
87/06/03  257140  50233  N.FERLAND                580
87/06/03  257140  50237  N.FERLAND                490
87/06/03  257130  50242  D.WHITEHEAD              435
87/06/05  257130  50283  B.MARSHALL               407
87/06/26  257150  50342  STENSON,MICHAEL          404
87/06/26  257130  50354  L.SABOUNGHI              420
87/06/26  257140  50369  N.FERLAND                420
87/07/06  257130  50421  S.VESPA                  420
87/07/06  257150  50426  IAN DAYLY                334
87/07/31  257130  50584  D. WHITEHEAD             264
87/08/03  257130  50588  B MARSHALL                20
87/08/11  257130  50600  L.. SABOUNGHI            420
87/10/05  257110  50567  EN ROUTE CARD          50367
87/10/19  257130  50931  D.WHITEHEAD              400
87/10/19  257130  50925  L.SABOUNGHI              420
87/10/19  257130  50921  D.WHITEHEAD              275
87/10/26  257140  50990  T.SMITH                  260
87/11/02  257100  51048  N.E.RUDBACK              230


Total ( 24 Rec.) Pour article         = 0802
```

4.2.9

```
                    LISTE DES KILOMETRAGES
                    ======================

CE PROGRAMMME IMPRIME UNE LISTE DE TOUT LES ARTICLES ORGANIQUES
0801 ET 0802 AVEC LES INFORMATIONS SUIVANTE : LA DATE. LE CENTRE DE
RESPONSABILITE. # A.P.V.. LE NOM DU BENEFICIAIRE ET LE KILOMETRAGE.
CETTE LISTE SERA ENVOYEE A L'IMPRIMANTE ET LA DUREE D'IMPRESSION
EST DE 5 MINUTES.


   POUR CONTINUER LA SESSION APPUYEZ SUR [CR] OU POUR TERMINER
   LA SESSION ET RETOURNER AU MENU TAPEZ '@" ET APPUYEZ SUR [CR].

          S.V.P. VOTRE REPONSE ? -> @
```

```
87/10/27 [ 14:56:17]                                          Page 1

Liste pour : centre               : 257100
-------------------------------------
arti  budg  charg
====  ====  =====
0101  0100   1010
0102  0100   1010
0103  0100   1010
0104  0100   1010
0153  0100   1010
0154  0100   1010
0156  0100   1010
0165  0100   1010
01ST  01ST   1018
0201  0200   1010
0301  0300   1010
0420  0400   1010
0459  0400   1010
0801  0800   1020
0802  0800   1020
0803  0800   1020
0811  0800   1020
0812  0800   1020
0813  0800   1020
0814  0800   1020
0815  0800   1020
0821  0800   1020
0850  0800   1020
1010  1000   1020
2014  2000   1020
2015  2000   1020
2021  2000   1020
2022  2000   1020
2023  2000   1020
2024  2000   1020
2029  2000   1020
2311  2300   1020
2371  2300   1020
2376  2300   1020
2398  2300   1020
2410  2400   1020
2412  2400   1020
2414  2400   1020
2420  2400   1020
2422  2400   1020
2424  2400   1020
```

4.2.10

```
Liste pour : centre           : 257150
---------------------------------------
arti  tudg  charg
====  ====  =====
2376  2300   1020
2398  2300   1020
2410  2400   1020
2412  2400   1020
2414  2400   1020
2420  2400   1020
2422  2400   1020
2424  2400   1020
2435  2400   1020
2440  2400   1020
3210  3200   1020
4806  4800   1020
4808  4800   1020
6135  6100   2099
6149  6100   2099
6154  6100   2099
6165  6100   2099
6166  6100   2099
7839  7800   1020
8901  8900   7240
8912  8900   7240
9537  9500   8110
9595  9500   8110
9631  96CA   9610
9632  96CA   9610
9651  9600   9100
9652  9600   9100
9698  9600   9100
9901  9900   8110
9902  9900   8110
9903  9900   8110
9911  9900   8110
9912  9900   8110
9913  9900   8110
9920  9900   8110

Total ( 80 Rec.) Pour centre           = 257150
```

```
87/11/03 [ 11:10:42]                                                                    Page 1
                 CONTROLE DES AVANCES DE VOYAGE    POUR : 2 NOV 87

                 ==============================


Liste pour : centre            : 257120
             article           : 0850
---------------------------------------
date     a.p.v notes                  montant          dep/cum          cum/cfi        date voy  No de SEQU
======== ===== ====================  ==============  ===============  ===============  ========  ==========
87/10/14 50908 M.AVNI                         150.00        17,286.34     1.273.253.17  87/10/28        1985
                                      ==============
                                              150.00
Total ( 1 Rec.) Pour article          = 0850

                                      ==============
                                              150.00
Total ( 1 Rec.) Pour centre           = 257120
```

4.2.11

```
87/11/03 [ 11:10:42]                                                                                   Page 3
                        CONTROLE DES AVANCES DE VOYAGE     POUR : 2 NOV 87

                        ==============================


Liste pour : centre            : 257150
                article        : 0850
-----------------------------------------
date      a.p.v  notes                 montant          dep/cum          cum/cfi          date voy  No de SEQU
========  =====  ====================  ===============  ===============  ===============  ========  ==========
87/10/14  50890  M,STENSON                   11.455.00        19.143.19     1.413,407.33  87/10/15        2019
87/10/19  50928  M.STENSON                    2,580.00        21,223.19     1.412,520.23  87/11/02        2039
                                       ===============
                                             14,035.00
Total ( 2 Rec.) Pour article          = 0850


                                       ===============
                                             14,035.00
Total ( 2 Rec.) Pour centre           = 257150


                                       ==============
                                             15,385.00
 *** GRAND Total( 8 Rec.) ***
```

```
87/10/27 [ 14:04:45]                                                  Page 1
       LE SOLDE PAR CHARGE FINANCIERE     POUR LE MOIS : 27 OCT 87

       ==============================


Liste pour : charge #         :  1010
-------------------------------------
budget          cumul           balance         bgt/cum         cum/mois
==============  ==============  ==============  ==============  ==============
  2,117,000.00    1,242,950.80      874,049.20    1,205,438.00      183,821.04
==============  ==============  ==============  ==============  ==============
  2,117,000.00    1,242,950.80      874,049.20    1,205,438.00      188,921.04
Total ( 1 Rec.) Pour charge #          =  1010


Liste pour : charge #         :  1018
-------------------------------------
budget          cumul           balance         bgt/cum         cum/mois
==============  ==============  ==============  ==============  ==============
          0.00       28,156.64      -28,156.64            0.00        9,007.46
==============  ==============  ==============  ==============  ==============
          0.00       28,156.64      -28,156.64            0.00        9,007.46
Total ( 1 Rec.) Pour charge #          =  1018


Liste pour : charge #         :  1020
-------------------------------------
budget          cumul           balance         bgt/cum         cum/mois
==============  ==============  ==============  ==============  ==============
  5,245,700.00    1,464,414.45    3,781,285.55    2,423,900.00      257,063.71
==============  ==============  ==============  ==============  ==============
  5,245,700.00    1,464,414.45    3,781,285.55    2,423,900.00      257,063.71
Total ( 1 Rec.) Pour charge #          =  1020


Liste pour : charge #         :  1023
-------------------------------------
budget          cumul           balance         bgt/cum         cum/mois
==============  ==============  ==============  ==============  ==============
          0.00            0.00            0.00            0.00            0.00
==============  ==============  ==============  ==============  ==============
          0.00            0.00            0.00            0.00            0.00
Total ( 1 Rec.) Pour charge #          =  1023
```

4.2.12

```
87/10/27 [ 14:04:45]                                                            Page 6
      LE SOLDE PAR CHARGE FINANCIERE     POUR LE MOIS : 27 OCT 87

      ==============================


Liste pour : charge #          :  9520
-------------------------------------
budget          cumul           balance         bgt/cum         cum/mois
==============  ==============  ==============  ==============  ==============
          0.00            0.00            0.00            0.00            0.00
==============  ==============  ==============  ==============  ==============
          0.00            0.00            0.00            0.00            0.00
Total ( 1 Rec.) Pour charge #         =  9520

Liste pour : charge #          :  9610
-------------------------------------
budget          cumul           balance         bgt/cum         cum/mois
==============  ==============  ==============  ==============  ==============
          0.00      -95,575.20       95,575.20            0.00       11,211.55
==============  ==============  ==============  ==============  ==============
          0.00      -95,575.20       95,575.20            0.00       11,211.55
Total ( 1 Rec.) Pour charge #         =  9610

==============  ==============  ==============  ==============  ==============
  9,812,700.00    1,449,102.09    8,363,597.91    4,379,338.00      498,827.48
 *** GRAND Total( 22 Rec.) ***
```

```
87/11/02 [ 13:57:39]                                              Page 1
     STATUT DES FONDS PAR CENTRE      TERMINANT LE: 2 NOVEMBRE

     ==========================


Liste pour : centre          : 257100
---------------------------------------
arti  budget $          cumul            cumul/m
====  ==============    ==============   ==============
0101       75,076.00              0.00             0.00
0102       75,076.00              0.00             0.00
0103       75,076.00              0.00             0.00
0104       75,076.00         62,233.03             0.00
0153       75,076.00              0.00             0.00
0154       75,076.00              0.00             0.00
0156       75,076.00              0.00             0.00
0165       75,076.00            562.43             0.00
01ST            0.00              0.00             0.00
0201            0.00              0.00             0.00
0301            0.00              0.00             0.00
0420            0.00              0.00             0.00
0459            0.00            710.00             0.00
0801        6,000.00              9.50             0.00
0802        6,000.00          4,248.71           108.74
0803        6,000.00            724.88             0.00
0811        6,000.00              0.00             0.00
0812        6,000.00              0.00             0.00
0813        6,000.00              0.00             0.00
0814        6,000.00              0.00             0.00
0815        6,000.00              0.00             0.00
0821        6,000.00              0.00             0.00
0850        6,000.00              0.00             0.00
1010            0.00              0.00             0.00
2014        2,000.00              0.00             0.00
2015        2,000.00              0.00             0.00
2021        2,000.00              0.00             0.00
2022        2,000.00              0.00             0.00
2023        2,000.00              0.00             0.00
2024        2,000.00              0.00             0.00
2029        2,000.00              0.00             0.00
2311       20,000.00              0.00             0.00
2371       20,000.00              0.00             0.00
2376       20,000.00              0.00             0.00
2398       20,000.00       -819,280.85             0.00
2410      168,000.00              0.00             0.00
```

4.2.13

```
87/11/02 ( [illegible] )                                          Page 17
     STATUT DES FONDS PAR CENTRE     TERMINANT LE: 2 NOVEMBRE

     ==========================


Liste pour : centre              : 257150
-------------------------------------------
arti  budget $            cumul              cumul/m
====  ==============  ==============  ==============
9911            0.00            0.00            0.00
9912            0.00            0.00            0.00
9913            0.00            0.00            0.00
      ==============  ==============  ==============
        4,051,140.00      344,179.08        1.075.76
Total ( 75 Rec.) Pour centre             = 257150

      ==============  ==============  ==============
       35.933,848.00    2,984,350.67       40,265.92
*** GRAND Total( 516 Rec.) ***
```

01

```
87/11/02 [ 14:03:43]                                         Page 1

Liste pour : centre          : 257100
-------------------------------------
arti  budget $         cumul            cumul/m
====  ==============   ==============   ==============
9631            0.00             0.00             0.00
9632            0.00             0.00             0.00
9651            0.00        -5,029.26             0.00
9652            0.00             0.00             0.00
9698            0.00             0.00             0.00
9920            0.00             0.00             0.00
      ==============   ==============   ==============
                0.00        -5,029.26             0.00
Total ( 6 Rec.) Four centre             = 257100

Liste pour : centre          : 257110
-------------------------------------
arti  budget $         cumul            cumul/m
====  ==============   ==============   ==============
9631            0.00      -138,071.67             0.00
9632            0.00       125,734.81             0.00
9651            0.00       -70,854.49          -555.67
9652            0.00        98.666.93             0.00
9698            0.00      -363,031.24             0.00
9920            0.00             0.00             0.00
      ==============   ==============   ==============
                0.00      -347,555.66          -555.67
Total ( 6 Rec.) Pour centre             = 257110

Liste pour : centre          : 257120
-------------------------------------
arti  budget $         cumul            cumul/m
====  ==============   ==============   ==============
9631            0.00      -450,804.31             0.00
9632            0.00       432,290.38             0.00
9651            0.00       -88,934.48             0.00
9652            0.00        70.940.79             0.00
9698            0.00      -385.246.30             0.00
9920            0.00             0.00             0.00
      ==============   ==============   ==============
                0.00      -421,753.92             0.00
Total ( 6 Rec.) Pour centre             = 257120
```

```
87/11/02 [ 14:03:43]                                                   Page 2

Liste pour : centre            : 257130
--------------------------------------------
arti  budget $           cumul              cumul/m
====  ==============     ==============     ==============
9632            0.00         145.231.68               0.00
9651            0.00         -38.728.91               0.00
9652            0.00          50.897.28               0.00
9698            0.00        -272.009.98               0.00
9920            0.00               0.00               0.00
9921            0.00               0.00               0.00
9921            0.00               0.00               0.00
      ==============     ==============     ==============
                0.00        -294,450.53               0.00
Total ( 8 Rec.) Pour centre              = 257130

Liste pour : centre            : 257140
--------------------------------------------
arti  budget $           cumul              cumul/m
====  ==============     ==============     ==============
9631            0.00        -121,809.06               0.00
9632            0.00          91,499.31               0.00
9651            0.00         -25,992.68               0.00
9652            0.00          67,889.67           6,244.14
9698            0.00        -114,572.80               0.00
9920            0.00               0.00               0.00
      ==============     ==============     ==============
                0.00        -102,985.56           6,244.14
Total ( 6 Rec.) Pour centre              = 257140

Liste pour : centre            : 257150
--------------------------------------------
arti  budget $           cumul              cumul/m
====  ==============     ==============     ==============
9631            0,00        -291,485.92               0.00
9632            0.00         291,480.18               0.00
9651            0.00         -88,349.05               0.00
9652            0.00         138,335.02               0.00
9698            0.00        -267,499.49               0.00
9920            0.00               0.00               0.00
      ==============     ==============     ==============
                0.00        -217,519.26               0.00
Total ( 6 Rec.) Pour centre              = 257150

      ==============     ==============     ==============
                0.00      -1,389,294.19           5,689.47
*** GRAND Total( 38 Rec.) ***
```

APPENDIX A - SECTION 4.3

```
*** MENU pour ANTOINE          ***
-----------------------------------

 1- initialisation du MOIS          2- MODIFIER PREVISION DES DEPENSE
 3- RAPPORT DE PERFORMANCE BGT.     4- RPT DES CHARGES FINANCIERES
 5- RAPPORT DE VARIANCE             6- RAPPORT DE VARIANCE FINAL
 7- MODIFIER L'ENGAGEMENT

Choisissez une fonction ->
```

PERFORMANCE REPORT FOR FISCAL YEAR 1987/88 MONTH OF octobre 1987
GROUP/BRANCH/SECTION : ADMFC/DGRD/TDC

YEAR TO DATE				FULL YEAR		
EXPENDITURES TO 87/11/03	VARIANCE AS AT 87/11/03	O/S COMMITMENTS AS AT 87/11/03	EXPENDITURE TYPE	BUDGET	FORECAST	SURPLUS/ DEFICIT
			===== PERSON-YEARS ======			
			FINANCIAL ($000's)			
			PERSONEL COSTS:			
1,237,968	-32,530	1,250,835	-ALLOT # 1010	2,117,000	2,117,000	0
33,140	-33,140	6,000	-ALLOT # 1018	0	45,000	-45,000
1,271,108	-65,670	1,256,835	SUB-TOTAL	2,117,000	2,162,000	-45,000
			OTHER OPERATING COSTS			
1,464,415	959,486	3,528,863	-ALLOT # 2099	5,245,700	5,200,700	45,000
107,935	642,065	741,000	-ALLOT # 3820	2,450,000	2,450,000	0
1,572,349	1,601,551	4,269,863	SUB-TOTAL	7,695,700	7,650,700	45,000
			CAPITAL COSTS			
0	0	0	-ALLOT # 2099	0	0	0
2,843,457	1,535.881	5,526,698	====== TOTAL ======	9,812,700	9,812,700	0

SUBMITTED BY :

AN ANALYSIS OF THE YEAR-END FORECAST

SURPLUS (DEFICIT) MUST BE PROVIDE WITH THIS REPORT.

BUDGET MANAGER:
DATE :87/11/03

4.3.1

PERFORMANCE REPORT FOR FISCAL YEAR 1987/88 MONTH OF octobre 1987
GROUP/BRANCH/SECTION : ADNFC/DGRD/TDC

Memo. antoine

③

YEAR TO DATE				FULL YEAR		
EXPENDITURES TO 87/11/03	VARIANCE AS AT 87/11/03	O/S COMMITMENTS AS AT 87/11/03	EXPENDITURE TYPE	BUDGET	FORECAST	SURPLUS/ DEFICIT
			===== PERSON-YEARS ======			
			000's)			
1,237,968	-32,530	1,250.		2,117,000	2,117,000	0
33,140	-33,140	6.		0	45,000	-45,000
1,271,108	-65,670	1,256,[illegible]	SUB-TOTAL	2,117,000	2,162,000	-45,000
			OTHER OPERATING COSTS			
1,464,415	959,486	3,528,863	-ALLOT # 2099	5,245,700	5,200,700	45,000
107,935	642,065	741,000	-ALLOT # 3820	2,450,000	2,450,000	0
1,572,349	1,601,551	4,269,863	SUB-TOTAL	7,695,700	7,650,700	45,000
			CAPITAL COSTS			
0	0	0	-ALLOT # 2099	0	0	0
2,843,457	1,535,881	5,526,698	====== TOTAL ======	9,812,700	9,812,700	0

SUBMITTED BY :

AN ANALYSIS OF THE YEAR-END FORECAST

SURPLUS (DEFICIT) MUST BE PROVIDE WITH THIS REPORT.

BUDGET MANAGER:
DATE :87/11/03

```
               RAPPORT DES BUDGETS PAR CHARGE FINANCIERE          93/11/03
               =========================================

 # CHARGE :  1010

        BGT$ANN :   2,117,000.00     DEP/CUM :   1.244.026.56     BALANCE :     872,973.44

      MOIS          BGT/MOIS        BGT/CUM         DEP/MOIS       DEP/CUM
      ====          ========        =======         ========       =======

     AVRIL              0.00            0.00       247.936.67     247.936.67

     MAI                0.00            0.00       177.393.73     425.330.40

     JUIN         610.908.00      610,908.00       166.898.16     592,228.56

     JUILLET      148.233.00      759,141.00       190.116.75     782.345.31

     AOUT         148.233.00      907,374.00       103,388.69     885,734.00

     SEPTEMBR     148,832.00    1.056,206.00       168,395.76   1.054,129.76

     OCTOBRE      149,232.00    1,205,438.00       188,821.04   1.242,950.80

     NOVEMBRE     223,342.00    1,428,780.00         1.075.76   1.244.026.56

     DECEMBRE     148,730.00    1.577,510.00             0.00   1.244.026.56

     JANVIER      149.030.00    1,726,540.00             0.00   1.244,026.56

     FEVRIER      148,930.00    1.875,470.00             0.00   1.244.026.56

     MARS         241.530.00    2,117,000.00             0.00   1,244,026.56
```

4.3.2

```
                 RAPPORT DES BUDGETS PAR CHARGE FINANCIERE            87/11/03
                 =========================================

# CHARGE :  3820

       BGT$ANN :   2,250,000.00    DEP/CUM :     121,092.66    BALANCE :   2,128,907.34

      MOIS          BGT/MOIS        BGT/CUM         DEP/MOIS       DEP/CUM
      ====          ========        =======         ========       =======

    AVRIL               0.00            0.00             0.00          0.00

    MAI                 0.00            0.00          -618.99       -618.99

    JUIN          150,000.00      150,000.00        26,094.52     25,475.53

    JUILLET        70,000.00      220,000.00        37,538.30     63,013.83

    AOUT          290,000.00      510,000.00        16,715.42     79,729.25

    SEPTEMBR      120,000.00      630,000.00        19,911.39     99,640.64

    OCTOBRE       120,000.00      750,000.00         8,294.16    107,934.80

    NOVEMBRE      370,000.00    1,120,000.00        13,157.86    121,092.66

    DECEMBRE      170,000.00    1,290,000.00             0.00    121,092.66

    JANVIER       280,000.00    1,570,000.00             0.00    121,092.66

    FEVRIER       280,000.00    1,850,000.00             0.00    121,092.66

    MARS          400,000.00    2,250,000.00             0.00    121,092.66
```

CENTRE DE DEVELOPPEMENT DES TRANSPORTS

POUR LE MOIS :
31 OCT 87
MONTH OF :

VARIANCE REPORT / RAPPORT DE VARIANCE

TDC ROLL UP
1987/88

DESCRIPTION DESCRIPTION	LINE OBJECT ARTICLE ORGANIQUE	ANNUAL BUDGET BUDGET ANNUEL	EXPEND + COMMITMENTS DEPENSES + ENGAGEMENT	EXPEND TO DATE DEPENSES A DATE	FORECAST EXPEND PREVISION DES DEPENSES	FORECAST VARIANCE PREVISION DE L'ECART
RENTAL OF OFF MACHINERY + EQPT LOC.-MACHINES + MAT. DE BUREAU	1020-3400	9,000	10,136	4,404	9,000	0
RENTAL OF OFF MACHINERY + EQPT LOC.-MACHINES + MAT. DE BUREAU	1023-3400	0	0	0	0	0
RENTAL OF TELECOMMUNICTN EQPT LOC-EQUIPEMENT TELECOMMUNICAT	1020-3500	30,000	15,995	12,948	30,000	0
RENTALS-OTHER LOCATIONS - AUTRES	1020-3700	3,000	375	375	3,000	0
PURCH REPAIRS-BLDGS + WORKS ACHAT SERV REPAR-BATIMENT OUVR	1020-4100	2,500	2,687	338	2,500	0
PURCHASED REPAIR TO EQUIPMENT ACHAT SERV REPAR. DE MATERIEL	1020-4200	20,000	14.569	9,348	20,000	0
MATERIALS + SUPPLIES MATERIEL + APPROVISIONNEMENTS	1020-4700	10.500	7.988	4,639	10,500	0
OFF MTLS + SUPPLIES + HOUSE FR MAT. + FOURNI. BUREAU+MOBILIER	1020-4800	70,000	50,193	44,064	70,000	0
MATERIALS + SUPPLIES-DATA PROC MAT.+ FOURNI-TRAITEMENT DONNEE	1020-4900	4.000	1.578	1.578	4,000	0
ACQ OF CONSTRN-MACH EQPT FURN ACQ DU CONST-MACH EQUIP.+AMEU.	2099-6100	0	0	0	0	0

4.3.3

CENTRE DE DEVELOPPEMENT DES TRANSPORTS

POUR LE MOIS :
31 OCT 87
MONTH OF :

VARIANCE REPORT - RAPPORT DE VARIANCE

TDC ROLL UP
1987/88

DESCRIPTION DESCRIPTION	LINE OBJECT ARTICLE ORGANIQUE	ANNUAL BUDGET BUDGET ANNUEL	EXPEND + COMMITMENTS DEFENSES + ENGAGEMENT	EXPEND TO DATE DEPENSES A DATE	FORECAST EXPEND PREVISION DES DEPENSES	FORECAST VARIANCE PREVISION DE L'ECART
ACQUISISTION OF COMPUTERS ACQUISITION D'ORDINATEUR	2099-6200	0	0	0	0	0
QUEBEC-ERDA CONTRIBUTIONS CONTRIBUTIONS QUEBEC-ERDA	3820-7200	2,450,000	848,935	107,935	2,450,000	0
MISCELLANEOUS EXPENDITURES DEPENSES DIVERSES	1020-7800	3,000	97	97	3,000	0
TOTAL		9,812,700	3,370,155	2,343,457	9,812,700	0

CENTRE DE DEVELOPPEMENT DES TRANSPORTS

POUR LE MOIS :
31 OCTOBRE
MONTH OF :

VARIANCE REPORT / RAPPORT DE VARIANCE

TDC ROLL UP
1987/88

DESCRIPTION	LINE OBJECT	CURRENT EXPEND	EXPEND TO DATE	BUDGET TO DATE	VARIANCE	ANNUAL BUDGET	COMMITMENTS	FORECAST EXPEND	FORECAST VARIANCE
DESCRIPTION	ARTICLE ORGANIQUE	DEPENSES DU MOIS	DEPENSES A DATE	BUDGET A DATE	ECART	BUDGET ANNUEL	ENGAGEMENT	PREVISION DES DEPENSES	PREVISION DE LECART
SALAIRE + WAGES-CONT STAFF SALAIRE + GAGES-EMPLOYES PERM	1010-0100	0.00	1,215,775.34	1,201,738.00	-14,037.34	2,110,000.00	1,250,835.18	2,085,000.00	25,000.00
SALAIRE + WAGES-CONT STAFF SALAIRE + GAGES-EMPLOYES PERM	1018-0100	0.00	33,139.64	0.00	-33,139.64	0.00	6,000.00	45,000.00	-45,000.00
OVERTIME-CONTINUING STAFF SURTEMPS-EMPLOYES PERMANENTS	1010-0200	0.00	264.78	3,700.00	3,435.22	7,000.00	0.00	2,000.00	5,000.00
TERM EMPLOYEES EMPLOYES TEMPORAIRES	1010-0300	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALLOWANCES + OTHER BENEFITS ALLOCATIONS + AUTRES AVANTAGES	1010-0400	0.00	21,927.68	0.00	-21,927.68	0.00	0.00	30,000.00	-30,000.00
TRAVEL EXPENSES DEPENSES DE VOYAGE	1020-0800	0.00	88,058.42	78,500.00	-9,558.42	132,000.00	5,000.00	122,000.00	10,000.00
RELOCATION RELOCATION	1020-0900	0.00	1,049.50	0.00	-1,049.50	0.00	10,000.00	10,000.00	-10,000.00
POSTAGE FREIGHT EXPRESS + CART AFFRANCHIS FRET MESSAGE + CAM	1020-1000	0.00	12,733.14	11,000.00	-1,733.14	23,200.00	404.05	23,200.00	0.00
TELEPHONE TELEGRAPH + MISC EQP TELEPHONE TELEGRAPHE + EQUIP.	1020-1100	0.00	49,427.99	46,000.00	-3,427.99	90,000.00	0.00	80,000.00	0.00
ADVERTISING PUBLICITE	1020-1300	0.00	1,529.60	3,000.00	1,470.40	3,000.00	1,523.60	3,000.00	0.00

CENTRE DE DEVELOPPEMENT DES TRANSPORTS

POUR LE MOIS :
31 OCTOBRE
MONTH OF :

VARIANCE REPORT / RAPPORT DE VARIANCE

TDC ROLL UP
1987/88

DESCRIPTION DESCRIPTION	LINE OBJECT ARTICLE ORGANIQUE	CURRENT EXPEND DEPENSES DU MOIS	EXPEND TO DATE DEPENSES A DATE	BUDGET TO DATE BUDGET A DATE	VARIANCE ECART	ANNUAL BUDGET BUDGET ANNUEL	COMMITMENTS ENGAGEMENT	FORECAST EXPEND PREVISION DES DEPENSES	FORECAST VARIANCE PREVISION DE LECART
ENTALS-OTHER OCATIONS - AUTRES	1020-3700	0.00	375.00	2,300.00	1,925.00	3,000.00	0.00	3,000.00	0.00
URCH REPAIRS-BLDGS + WORKS CHAT SERV REPAR-BATIMENT OUVR	1020-4100	0.00	337.51	1,500.00	1,162.49	2,500.00	2,349.20	2,500.00	0.00
URCHASED REPAIR TO EQUIPMENT CHAT SERV REPAR. DE MATERIEL	1020-4200	0.00	9,348.12	11,500.00	2,151.88	20,000.00	10,220.29	20,000.00	0.00
MATERIALS + SUPPLIES MATERIEL + APPROVISIONNEMENTS	1020-4700	0.00	4,638.75	6,500.00	1,861.25	10,500.00	3,348.81	10,500.00	0.00
OFF MTLS + SUPPLIES + HOUSE FR MAT. + FOURNI. BUREAU+MOBILIER	1020-4800	0.00	44,063.92	45,000.00	936.08	70,000.00	6,128.85	70,000.00	0.00
MATERIALS + SUPPLIES-DATA PROC MAT.+ FOURNI-TRAITEMENT DONNEE	1020-4900	0.00	1,577.59	3,000.00	1,422.41	4,000.00	0.00	4,000.00	0.00
ACQ OR CONSTRN-MACH EQPT FURN ACQ OU CONST-MACH EQUIP.+AMEU.	2099-6100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ACQUISISTION OF COMPUTERS ACQUISITION D'ORDINATEUR	2099-6200	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
QUEBEC-ERDA CONTRIBUTIONS CONTRIBUTIONS QUEBEC-ERDA	3020-7260	0.00	107,934.80	750,000.00	642,065.20	2,450,000.00	741,000.00	2,450,000.00	0.00
MISCELLANEOUS EXPENDITURES DEPENSES DIVERSES	1020-7800	0.00	97.39	1,900.00	1,802.61	3,000.00	0.00	3,000.00	0.00
		[illegible]	[illegible]	[illegible]	[illegible]	9,812,730.00	5,526,697.87	9,812,730.00	0.00

APPENDIX A - SECTION 4.4

```
                  *** MENU pour RAPPORT          ***
                  -----------------------------------

  1- initialisation du MOIS             2- IMPRIMER un AMENDEMENT AU BGT
  2- IMPRIMER les BUDGETS

Choisissez une fonction ->
```

```
BUDGET PAR MOIS POUR LE CENTRE # :257100   BUDGET # - 0100

       0.00        0.00   35,307.00    7,231.00    7,231.00    7,231.00
   7,231.00   10,845.00    7,231.00    7,231.00    7,231.00   17,231.00
--------------------------------------------------------------------------

DEPENSE PAR MOIS :
  19,826.37   13,217.58   13,217.58   13,217.58    6,624.63   13,217.58
 -16,525.86        0.00        0.00        0.00        0.00        0.00
--------------------------------------------------------------------------

BALANCE PAR MOIS :

       0.00  -13,217.58   22,089.42   -5,986.58      606.37   -5,986.58
  23,756.86   10,845.00    7,231.00    7,231.00    7,231.00   17,231.00
--------------------------------------------------------------------------

BUDGET $ :      75,076.00
CUMULATIF DES DEPENSES :     62,795.46
BALANCE TOTAL :    12,280.54
BUDGET POUR LANNEE :  114,000.00
NUMERO DE LA CHARGE FINANCIERE :  1010

==========================================================================
```

4.4.1

APPENDIX A - SECTION 4.5

```
*** MENU pour PAYROLL          ***
------------------------------------

 1- AJOUT D'UN EMPLOYE AU FICHIER       2- EFFACER UN RECORD DU FICHIER
 3- initialisation du MOIS              4- MISE A JOUR DES FICHIERS.
 5- CORRECTION DES DONNEES              6- RECUP. D'ENTREE DES DONNEES
 7- ENTREE DES DONNEES                  8- LISTE DE PAYE DU TDC

Choisissez une fonction ->
```

```
87/10/26 [ 09:00:59]                                                                      Page 1
                                        LISTE DE PAYE DU 87/10/19   AU 87/11/01


Liste pour : centre          : 257100
             art1            : 0104
-------------------------------------
employe         art1 salaire-brut art2 mnt.prime    art3 surtemps     libr libre-2      libr libre-4
=============== ==== ============ ==== ============ ==== ============ ==== ============ ==== ============
BOIVIN L        0104              0165        36.76 0201         0.00 0459         0.00              0.00
EGGLETON P      0104              0165         0.00 0201         0.00 0459         0.00              0.00
RUDBACK T       0104              0165         0.00 0201         0.00 0459         0.00              0.00
                     ------------      ============      ============      ============      ============
                                              36.76              0.00              0.00              0.00
Total ( 3 Rec.) Pour art1          = 0104

                     ============      ============      ============      ============      ============
                                              36.76              0.00              0.00              0.00
Total ( 3 Rec.) Pour centre        : 257100

Liste pour : centre          : 257110
             art1            : 0104
-------------------------------------
employe         art1 salaire-brut art2 mnt.prime    art3 surtemps     libr libre-2      libr libre-4
=============== ==== ============ ==== ============ ==== ============ ==== ============ ==== ============
BEAUPRE C       0104              0165        30.67 0201         0.00 0459         0.00              0.00
DIBBLE D        0104              0165        30.67 0201         0.00 0459         0.00              0.00
GORE N          0104              0165         0.00 0201         0.00 0459         0.00              0.00
MCLAREN W       0104              0165        30.67 0201         0.00 0459         0.00              0.00
NISHIZAKI R     0104              0165         0.00 0201         0.00 0459         0.00              0.00
ROWAN W         0104              0165         0.00 0201         0.00 0459         0.00              0.00
                     ============      ============      ============      ============      ============
                                              92.01              0.00              0.00              0.00
Total ( 6 Rec.) Pour art1          = 0104
```

4.5.1

```
87/10/26 [ 09:00:59]                                                                   Page 7
                                   LISTE DE FAYE DU 87/10/19   AU 87/11/01


Liste pour : centre           : 257150
             art1             : 0104
-------------------------------------------
employe          art1  salaire-brut  art2  mnt.prime     art3  surtemps      libr  libre-2       libr  libre-4
===============  ====  ============  ====  ============  ====  ============  ====  ============  ====  ============
BERTRAND R       0104                 165          0.00  0201          0.00  0459          0.00                0.00
LAFRAMBOISE J    0104                 165         30.67  0201          0.00  0459          0.00                0.00
GADUBIN M        0104                 165         30.67  0201          0.00  0459          0.00                0.00
                       ============        ============        ============        ============        ============
                                                  92.01                0.00                0.00                0.00
Total ( 4 Rec.) Pour art1           = 0104


Liste pour : centre           : 257150
             art1             : 0131
-------------------------------------------
employe          art1  salaire-brut  art2  mnt.prime     art3  surtemps      libr  libre-2       libr  libre-4
===============  ====  ------------  ====  ============  ====  ============  ====  ============  ====  ============
PIERCE T         0131                0165          0.00  0201          0.00                0.00                0.00
RICHARD JG       0131                0165         30.67  0201          0.00                0.00                0.00
RIVET C          0131                0165          0.00  0201          0.00                0.00                0.00
SEMERY P         0131                0165         30.67  0201          0.00  0459          0.00                0.00
                       ============        ============        ============        ============        ============
                                                  61.34                0.00                0.00                0.00
Total ( 4 Rec.) Pour art1           = 0131


Liste pour : centre           : 257150
             art1             : 01ST
-------------------------------------------
employe          art1  salaire-brut  art2  mnt.prime     art3  surtemps      libr  libre-2       libr  libre-4
===============  ====  ============  ====  ============  ====  ============  ====  ============  ====  ============
DUCLOS G         01ST                  55          0.00  0201          0.00                0.00                0.00
                       ============        ============        ============        ============        ============
                                                   0.00                0.00                0.00                0.00
Total ( 1 Rec.) Pour art1           = 01ST

                       ============        ============        ============        ============        ============
                                                 153.35                0.00                0.00                0.00
Total ( 9 Rec.) Pour centr          = 257150

                       ============        ============        ============        ============        ============
*** GRAND Total( 56 Rec.) ***

    salaire-brut         82,147.79
    0165                  1,050.44
    0201                      0.00
                              0.00
                        ==========
         TOTAL           83,198.23
```

APPENDIX A - SECTION 4.6

```
                 *** MENU pour CONFEREN          ***
                 -----------------------------------

  1- initialisation du MOIS             2- CONFERENCE
  3- CORRECTION au MONTANT/conferen     4- "DIRECT" CONFERENCE
  5- VOIR CONF./BAL. A L'IMPRIMANTE     6- MODIFIER les CONFERENCES
  7- "PRECONFERENCE"                    8- RAPPORT MENSUEL de CONFERENCE

Choisissez une fonction ->
```

```
date jrs  a.p.v  dateconf     nomempl              montant     mont.dat     bal.date
========  =====  ===========  ================  ============  ===========  ============
84/05/10  DEBUT                                         0.00         0.00          0.00
87/06/05  50280  19 MAY 87    W.MCLAREN               195.00       195.00       -195.00
87/06/12  5007   1JUIN87      M.AUDETTE             1,373.68     1.568.68     -1.568.68
87/06/17  50326  I JUIN87     J.G.RICHARD             130.00     1.698.68     -1.698.68
87/07/28  05017  87/06/28     H. POSLUNS            1.304.37     3,003.05     -3,003.05
87/08/11  50602  87/07/20     D.W. DIBBLE             484.20     3.487.25     -3,487.25
87/08/20  50516  AUG.9        DIBBLE D.               856.73     4,343.98     -4,343.98
87/08/20  50506  87/10/14     TRN/ERGONOMICS        7.500.00    11.843.98    -11.843.98
87/10/14  5048   SEPT.14-17   L.SUEN                1.416.55    13.260.93    -13.260.93
87/10/19  50933  22 SEPT.87   LAFRAMBOISE J.          235.00    13,495.93    -13,495.93
87/10/19  50932  SEPT 14-17   SABOUNGHI L           1,190.49    14.686.42    -14,686.42
87/10/26  50988  OCT 12-14    MC LAREM W .S.C         393.01    15,079.43    -15,079.43
87/10/27  50997  OCT.4-5      I.BAYLY                 953.22    16,032.65    -16,032.65
87/10/27  50996  OCT 15 /87   J.G.RICHARD             165.00    16.197.65    -16,197.65
```

4.6.1

TRANSPORT CANADA
MONTHLY REPORT ON CONFERENCES

CONFERENCE TYPE GROUP: DGRD/TDC MONTH ENDING : 31 OCT 87

INTERGOVERNMENTAL
FEDERAL-PROVINCIAL
DEPARTMENTAL OTHER GOVERNMENT SPONSORED
NON-GOVERNMENTAL

CONFERENCE TITLE	LOCATION	NAME OF EMPLOYEE	DATE(S) OF CONFERENCE	REGISTRATION FEES	ACTUAL TRAVEL COST
TRAC ANNUAL CONFERENCE	SASKATOON.SAS.	.L.SUEN	SEPT.14-17	315.00	1,101.95
CONFERENCE INTERNATIONALE SUR LA TECH.DU COUSSIN D'AIR.	MONTREAL	LAFRAMBOISE J.	22 SEPT.87	235.00	0.00
RTAC ANNUAL CONFERENCE	SASKATOON	SABOUNGHI L	SEPT 14-17	0.00	1,190.49
ASS.OF AMERICAN RAILROADS CONFERENCE.	PITTSBURG	MC LAREM W .S.C	OCT 12-14	59.69	333.32
MARINR STRUCTURAL RELIABILITY SYMPOSIUM.	ARLINGTON.VA.	I.BAYLY	OCT.4-5	262.92	690.30
CONFERENCE DE L,ASSOCIATION CANADIENNE D'ERGONOMIE.	MONTREAL	J.G.RICHARD	OCT 15 /87	165.00	0.00

4.6.2

APPENDIX A - SECTION 5

```
*** Liste des MENUS pour PMU ***
--------------------------------

     ->RAPPORT
       MAJ
```

```
                    *** MENU pour RAPPORT          ***
                    ----------------------------------

  1- Liste des records                   2- Liste des repartitions mens.
  3- Rapport mensuel des pers.-mois      4- Dist. de l'utilisation des P-M
  5- Dtr.des allocations autorisees      6- Distr. de la variance minimum
  7- Distr. des allocations prevues      8- Distr. de la variance maximum
  9- SORT TOUTES LES DISTRIBUTIONS      10- Liste d'employes par statut
 11- Empl. par statut et categorie      12- IMPRIME LE RAPPORT MENSUEL
 13- Rapport MENSUEL/OTTAWA             14- RAP. TABLEAU UTIL. PERS-MOIS
 15- Pour referer aux donnees 84/85     16- Pour referer aux donnees 85/86
 17- Pour referer aux donnees 86/87     18- pour referer aux donneeS 83/84
 19- pour referer aux donnses 87/88

Choisissez une fonction->
```

```
87/11/30 [11:44:50]
                                LISTE DES POSTES INDEFINIS                                         Page 1

Liste pour : STATUT          : INDEF.
-------------------------------------------
NO. CODE       POSTE      GRPE- NOM                  RESSOURC        CENTRE     REMARQUE
=== ========== ========== ===== ==================== =============== ========== ===============================================
161            TDA-0301   SI-1  (VACANT)             BASE            257140

Total ( 1 Rec.) Pour STATUT          = INDEF.


 *** GRAND Total( 1 Rec.) ***
```

①

5.1

①

```
87/11/30 [11:45:00]                                                                                    Page 1
                                          LISTE DES POSTES, EMPLOYES ET ALLOCATIONS

Liste pour : TYPE            : EMPLOYE
             CENTRE          : 257100
------------------------------------------
NO.  CODE        POSTE       GRPE-  NOM                   STATUT      RESSOURC         REMARQUE
===  ==========  ==========  =====  ====================  ==========  ===============  ==================================================
 3               TDA-0004    SCY-4  BOIVIN, L.            INDET.      BASE

Total ( 1 Rec.) Pour CENTRE          = 257100

Liste pour : TYPE            : EMPLOYE
             CENTRE          : 257140
------------------------------------------
NO.  CODE        POSTE       GRPE-  NOM                   STATUT      RESSOURC         REMARQUE
===  ==========  ==========  =====  ====================  ==========  ===============  ==================================================
 5               TDA-0116    SCY-3  VERVILLE, J.          INDET.      BASE
 16              TDA-0128    ES-6   SUEN, L.              INDET.      BASE
 17              TDA-0206    ES-3   (VACANT)              INDET.      BASE

Total ( 3 Rec.) Pour CENTRE          = 257140

Liste pour : TYPE            : EMPLOYE
             CENTRE          : 257150
------------------------------------------
NO.  CODE        POSTE       GRPE-  NOM                   STATUT      RESSOURC         REMARQUE
===  ==========  ==========  =====  ====================  ==========  ===============  ==================================================
 22              TDA-0051    SCY-2  SADUBIN, M.           INDET.      BASE

Total ( 1 Rec.) Pour CENTRE          = 257150

Liste pour : TYPE            : EMPLOYE
             CENTRE          : 257140
------------------------------------------
NO.  CODE        POSTE       GRPE-  NOM                   STATUT      RESSOURC         REMARQUE
===  ==========  ==========  =====  ====================  ==========  ===============  ==================================================
 24              TDA-0018    LS-3   NOGRADY, J.           INDET.      BASE             CSS 31/05/86 - SOS 29/04/87
 25              TDA-0077    LS-2   EKINS, G.             INDET.      BASE             INTERIM. POSTE TDA-0018 DU 31/05/86 AU 30/11/87

Total ( 2 Rec.) Pour CENTRE          = 257140
```

5.2

LISTE DES POSTES, EMPLOYES ET ALLOCATIONS

(1)

```
Liste pour : TYPE              : EMPLOYE
             CENTRE            : 257130
-------------------------------------------
NO.  CODE        POSTE       GRPE-  NOM                   STATUT      RESSOURC         REMARQUE
===  ==========  ==========  =====  ====================  ==========  ===============  ================================================
209              TDAC-0170   ES-3   JOLY, M.F.            TERME       BASE             DECRET DU 1/11/87 AU 28/04/88

Total ( 1 Rec.) Pour CENTRE           = 257130

Liste pour : TYPE              : EMPLOYE
             CENTRE            : 257140A
-------------------------------------------
NO.  CODE        POSTE       GRPE-  NOM                   STATUT      RESSOURC         REMARQUE
===  ==========  ==========  =====  ====================  ==========  ===============  ================================================
210              TDA-0054    CR-3   LECLERC, L.           TERME       BASE             DECRET DU 1/10/87 AU 30/03/88

Total ( 1 Rec.) Pour CENTRE           = 257140A

Liste pour : TYPE              : EMPLOYE
             CENTRE            : 257130
-------------------------------------------
NO.  CODE        POSTE       GRPE-  NOM                   STATUT      RESSOURC         REMARQUE
===  ==========  ==========  =====  ====================  ==========  ===============  ================================================
211              TDA-0034    ENG-5  MARSHALL, B.          INDET.      BASE

Total ( 1 Rec.) Pour CENTRE           = 257130


Total ( 28 Rec.) Pour TYPE            = EMPLOYE


### GRAND Total( 91 Rec.) ###
```

(2)

```
87/11/30 [11:26:03]                                                                                          Page 1
                                 LISTE DE LA REPARTITION DES UTILISATIONS ET ALLOCATIONS PAR MOIS

Liste pour : TYPE            : EMPLOYE
             CENTRE          : INDEF.
-------------------------------------------
NO.  NOM                   AVR      MAI      JUN      JUL      AOUT     SEP      OCT      NOV      DEC      JAN      FEV      MAR
===  ====================  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
 90  EGGLETON, P.L.           0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00
                           =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
                              0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00
Total ( 1 Rec.) Pour CENTRE        = INDEF.

Liste pour : TYPE            : EMPLOYE
             CENTRE          : 257100
-------------------------------------------
NO.  NOM                   AVR      MAI      JUN      JUL      AOUT     SEP      OCT      NOV      DEC      JAN      FEV      MAR
===  ====================  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
  3  BOIVIN, L.               1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00
134  RUDBACK,N.E.             1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00
                           =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
                              2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00
Total ( 2 Rec.) Pour CENTRE        = 257100

Liste pour : TYPE            : EMPLOYE
             CENTRE          : 257110
-------------------------------------------
NO.  NOM                   AVR      MAI      JUN      JUL      AOUT     SEP      OCT      NOV      DEC      JAN      FEV      MAR
===  ====================  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
 28  MCLAREN, W.              1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00
 29  BEAUPRE, C.              1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00
 31  NISHIZAKI, R.            1.00     0.52     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00
 33  ROWAN, R.                1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00
 35  DIBBLE, D.               1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00
108  NOWICKI, C.              1.00     1.00     1.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00
120  GORE,N.                  1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00
130  GORE,N.                  0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00
                           =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
                              7.00     6.52     6.00     5.00     5.00     5.00     5.00     5.00     5.00     5.00     5.00     5.00
Total ( 8 Rec.) Pour CENTRE        = 257110

Liste pour : TYPE            : EMPLOYE
             CENTRE          : 257120
-------------------------------------------
NO.  NOM                   AVR      MAI      JUN      JUL      AOUT     SEP      OCT      NOV      DEC      JAN      FEV      MAR
===  ====================  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
 39  BEAULAC, H.              1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00
```

5.3

(2)

```
87/11/30 [11:26:03]
                                        LISTE DE LA REPARTITION DES UTILISATIONS ET ALLOCATIONS PAR MOIS                                 Page 6
Liste pour : TYPE             : ALLOCATN
             CENTRE           : 257140F
----------------------------------------------
NO.  NOM                        AVR      MAI      JUN      JUL      AOUT     SEP      OCT      NOV      DEC      JAN      FEV      MAR
===  ====================    =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
178  CREDIT                    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00
                             =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
                               -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00
Total ( 1 Rec.) Pour CENTRE            = 257140F

Liste pour : TYPE             : ALLOCATN
             CENTRE           : AUTORISE
----------------------------------------------
NO.  NOM                        AVR      MAI      JUN      JUL      AOUT     SEP      OCT      NOV      DEC      JAN      FEV      MAR
===  ====================    =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
 81  CREDIT                   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00
 82  CREDIT                    -0.64    -1.00    -1.00    -1.00    -1.00    -1.00    -0.32     0.00     0.00     0.00     0.00     0.00
                             =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
                              -42.64   -43.00   -43.00   -43.00   -43.00   -43.00   -42.32   -42.00   -42.00   -42.00   -42.00   -42.00
Total ( 2 Rec.) Pour CENTRE            = AUTORISE

                             =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
                              -45.64   -46.00   -46.00   -46.00   -46.00   -46.00   -45.32   -45.00   -45.00   -45.00   -45.00   -45.00
Total ( 3 Rec.) Pour TYPE              = ALLOCATN

                             =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
                                3.14     1.90     2.32     2.00    -0.62     0.14     3.13     5.00     3.84     2.43     2.00     1.96
### GRAND Total( 91 Rec.) ###
```

(3)

```
NO. CODE       POSTE      GRPE- NOM                  STATUT     RESSOURC        CENTRE     PM/AC
=== ========== ========== ===== ==================== ========== =============== ========== =======
 90 P          N/A        N/A   EGGLETON, P.L.       DETACHMT   DETACHEMENT     INDEF.        0.00
120 P          TDA-0101   ENG-5 GORE,N.              INDET.     BASE            257110        1.00
 43 P          TDA-0194   ENG-5 MORGAN, J.           INDET.     BASE            257120        1.00
127 P          TDA-0079   ENG-5 (VACANT)             INDET.     ARCTIC MARINE   257150        0.00
```

5.4

(3)

```
Liste pour : CODE            :
--------------------------------------------
NO.  CODE        POSTE       GRPE-  NOM                   STATUT      RESSOURC         CENTRE      PM/AC
===  ==========  ==========  =====  ====================  ==========  ===============  ==========  =======
161              TDA-0301    SI-1   (VACANT)              INDEF.      BASE             257140         0.00
                                                                                                   =======
Total ( 1 Rec.) Pour CODE            =                                                                0.00
```

```
Liste pour : CODE            : P
---------------------------------------------
NO.  CODE        POSTE       GRPE-  NOM                     STATUT      RESSOURC          CENTRE      PM/AC
===  ==========  ==========  =====  ======================  ==========  ================  ==========  =======
 90  P           N/A         N/A    EGGLETON, P.L.          DETACHMT    DETACHEMENT       INDEF.         0.00
127  P           TDA-0079    ENG-5  (VACANT)                INDET.      ARCTIC MARINE     257150         0.00
120  P           TDA-0101    ENG-5  GORE,N.                 INDET.      BASE              257110         1.00
 43  P           TDA-0194    ENG-5  MORGAN, J.              INDET.      BASE              257120         1.00
                                                                                                      =======
                                                                                                         2.00
Total ( 4 Rec.) Pour CODE           = P


                                                                                                      =======
                                                                                                         2.00
 *** GRAND Total( 5 Rec.) ***
```

(4)

```
87/11/30 [13:17:57]
                       PREVISION DE L'UTILISATION EN PERSONNES-MOIS                           Page 1
                           A LA FIN DE L'ANNEE FISCALE 1987-88

                                  OCT.     1987

RESSOURC         AVR      MAI      JUN      JUL      AOUT     SEP      OCT      NOV      DEC      JAN      FEV      MAR      TOTAL P
================ =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
ARCTIC MARINE       0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00
BASE               41.86    42.00    41.41    41.00    40.24    40.14    41.45    43.00    42.74    42.43    42.00    41.96   500.23
ENERGIE             0.64     1.00     1.00     1.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     3.64
ETUDIANT            3.28     1.90     2.91     3.00     2.14     3.00     3.00     3.00     2.10     2.00     2.00     2.00    30.33
FINANCE             3.00     3.00     3.00     3.00     3.00     3.00     4.00     4.00     4.00     3.00     3.00     3.00    39.00
                 =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
                   48.78    47.90    48.32    48.00    45.38    46.14    48.45    50.00    48.84    47.43    47.00    46.96   573.20
 *** GRAND Total( 5 Rec.) ***
```

5.5

```
87/11/30 [11:34:31]                                                                                   Page 1
                                  ALLOCATIONS AUTORISEES EN PERSONNES-MOIS
                                      POUR L'ANNEE FISCALE 1987-88

                                              OCT.       1987

RESSOURC          AVR      MAI      JUN      JUL      AOUT     SEP      OCT      NOV      DEC      JAN      FEV      MAR      TOTAL P
================  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
BASE               -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00  -504.00
ENERGIE             -0.64    -1.00    -1.00    -1.00    -1.00    -1.00    -0.32     0.00     0.00     0.00     0.00     0.00    -5.96
FINANCE             -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00   -36.00
                  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
                   -45.64   -46.00   -46.00   -46.00   -46.00   -46.00   -45.32   -45.00   -45.00   -45.00   -45.00   -45.00  -545.96
 *** GRAND Total( 3 Rec.) ***
```

(5)

5.6

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```
                         VARIANCE MIN. EN PERSONNES-MOIS
                        A LA FIN DE L'ANNEE FISCALE 1987-88
                   (COMPTE TENU DES ALLOCATIONS AUTORISEES SEULEMENT)

                                   OCT.      1987

RESSOURC          AVR      MAI      JUN      JUL      AOUT     SEP      OCT      NOV      DEC      JAN      FEV      MAR      TOTAL P
================  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
ARCTIC MARINE        0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00
BASE                -0.14     0.00    -0.59    -1.00    -1.76    -1.86    -0.55     1.00     0.74     0.43     0.00    -0.04    -3.77
ENERGIE              0.00     0.00     0.00     0.00    -1.00    -1.00    -0.32     0.00     0.00     0.00     0.00     0.00    -2.32
ETUDIANT             3.28     1.90     2.91     3.00     2.14     3.00     3.00     3.00     2.10     2.00     2.00     2.00    30.33
FINANCE              0.00     0.00     0.00     0.00     0.00     0.00     1.00     1.00     1.00     0.00     0.00     0.00     3.00
                  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
                     3.14     1.90     2.32     2.00    -0.62     0.14     3.13     5.00     3.84     2.43     2.00     1.96    27.24
*** GRAND Total( 5 Rec.) ***
```

5.7

(8)

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87/11/30 [13:29:02]                                                                              Page 1
                                  VARIANCE MAX. EN PERSONNES-MOIS
                                A LA FIN DE L'ANNEE FISCALE 1987-88
                            (COMPTE TENU DES ALLOCATIONS AUTORISEES ET PREVUES)

                                         OCT.     1987

RESSOURC         AVR      MAI      JUN      JUL      AOUT     SEP      OCT      NOV      DEC      JAN      FEV      MAR      TOTAL P
================ =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
ARCTIC MARINE       0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00
BASE               -0.14     0.00    -0.59    -1.00    -1.76    -1.86    -0.55     1.00     0.74     0.43     0.00    -0.04    -3.77
ENERGIE             0.00     0.00     0.00     0.00    -1.00    -1.00    -0.32     0.00     0.00     0.00     0.00     0.00    -2.32
ETUDIANT            3.28     1.90     2.91     3.00     2.14     3.00     3.00     3.00     2.10     2.00     2.00     2.00    30.33
FINANCE             0.00     0.00     0.00     0.00     0.00     0.00     1.00     1.00     1.00     0.00     0.00     0.00     3.00
                 =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
                    3.14     1.90     2.32     2.00    -0.62     0.14     3.13     5.00     3.84     2.43     2.00     1.96    27.24
 *** GRAND Total( 5 Rec.) ***
```

5.8

(9)

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87/11/30 [13:35:32]                                                                                  Page 1
                         PREVISION DE L'UTILISATION EN PERSONNES-MOIS
                            A LA FIN DE L'ANNEE FISCALE 1987-88

                                    OCT.      1987

RESSOURC        AVR     MAI     JUN     JUL     AOUT    SEP     OCT     NOV     DEC     JAN     FEV     MAR     TOTAL P
=============== ======= ======= ======= ======= ======= ======= ======= ======= ======= ======= ======= ======= =======
ARCTIC MARINE      0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
BASE              41.86   42.00   41.41   41.00   40.24   40.14   41.45   43.00   42.74   42.43   42.00   41.96  500.23
ENERGIE            0.64    1.00    1.00    1.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    3.64
ETUDIANT           3.28    1.90    2.91    3.00    2.14    3.00    3.00    3.00    2.10    2.00    2.00    2.00   30.33
FINANCE            3.00    3.00    3.00    3.00    3.00    3.00    4.00    4.00    4.00    3.00    3.00    3.00   39.00
                ======= ======= ======= ======= ======= ======= ======= ======= ======= ======= ======= ======= =======
                  48.78   47.90   48.32   48.00   45.38   46.14   48.45   50.00   48.84   47.43   47.00   46.96  573.20
 *** GRAND Total( 5 Rec.) ***
```

5.9

1)

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87/11/30 [13:36:22]                                                                                        Page 1
                                    ALLOCATIONS AUTORISEES EN PERSONNES-MOIS
                                         POUR L'ANNEE FISCALE 1987-88

                                                  OCT.      1987

RESSOURC          AVR      MAI      JUN      JUL      AOUT     SEP      OCT      NOV      DEC      JAN      FEV      MAR      TOTAL P
===============  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
BASE              -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00   -42.00  -504.00
ENERGIE            -0.64    -1.00    -1.00    -1.00    -1.00    -1.00    -0.32     0.00     0.00     0.00     0.00     0.00    -5.96
FINANCE            -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00    -3.00   -36.00
                 =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
                  -45.64   -46.00   -46.00   -46.00   -46.00   -46.00   -45.32   -45.00   -45.00   -45.00   -45.00   -45.00  -545.96
 *** GRAND Total( 3 Rec.) ***
```

9)

```
87/11/30 [13:36:50]                                                                                        Pase 1
                                   VARIANCE MIN. EN PERSONNES-MOIS
                                  A LA FIN DE L'ANNEE FISCALE 1987-88
                             (COMPTE TENU DES ALLOCATIONS AUTORISEES SEULEMENT)

                                         OCT.      1987

RESSOURC         AVR      MAI      JUN      JUL      AOUT     SEP      OCT      NOV      DEC      JAN      FEV      MAR      TOTAL P
===============  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
ARCTIC MARINE       0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00
BASE               -0.14     0.00    -0.59    -1.00    -1.76    -1.86    -0.55     1.00     0.74     0.43     0.00    -0.04    -3.77
ENERGIE             0.00     0.00     0.00     0.00    -1.00    -1.00    -0.32     0.00     0.00     0.00     0.00     0.00    -2.32
ETUDIANT            3.28     1.90     2.91     3.00     2.14     3.00     3.00     3.00     2.10     2.00     2.00     2.00    30.33
FINANCE             0.00     0.00     0.00     0.00     0.00     0.00     1.00     1.00     1.00     0.00     0.00     0.00     3.00
                 =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======  =======
                    3.14     1.90     2.32     2.00    -0.62     0.14     3.13     5.00     3.84     2.43     2.00     1.96    27.24
 *** GRAND Total( 5 Rec.) ***
```

```
87/11/30 [13:37:49]                                                                                  Page 1
                                       VARIANCE MAX. EN PERSONNES-MOIS
                                    A LA FIN DE L'ANNEE FISCALE 1987-88
                              (COMPTE TENU DES ALLOCATIONS AUTORISEES ET PREVUES)

                                               OCT.      1987

RESSOURC          AVR       MAI       JUN       JUL       AOUT      SEP       OCT       NOV       DEC       JAN       FEV       MAR       TOTAL P
================  =======   =======   =======   =======   =======   =======   =======   =======   =======   =======   =======   =======   =======
ARCTIC MARINE        0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
BASE                -0.14      0.00     -0.59     -1.00     -1.76     -1.86     -0.55      1.00      0.74      0.43      0.00     -0.04     -3.77
ENERGIE              0.00      0.00      0.00      0.00     -1.00     -1.00     -0.32      0.00      0.00      0.00      0.00      0.00     -2.32
ETUDIANT             3.28      1.90      2.91      3.00      2.14      3.00      3.00      3.00      2.10      2.00      2.00      2.00     30.33
FINANCE              0.00      0.00      0.00      0.00      0.00      0.00      1.00      1.00      1.00      0.00      0.00      0.00      3.00
                  =======   =======   =======   =======   =======   =======   =======   =======   =======   =======   =======   =======   =======
                     3.14      1.90      2.32      2.00     -0.62      0.14      3.13      5.00      3.84      2.43      2.00      1.96     27.24
 *** GRAND Total( 5 Rec.) ***
```

(9)

10)

```
                    CENTRE DE DEVELOPPEMENT DES TRANSPORTS
             LISTE DES EMPLOYES PAR STATUT (INDETERMINE ET TERME)
                              OCT.      1987
87/11/30 [13:48:10]
                                                                  Pase 1
Liste pour : TYPE               : EMPLOYE
             STATUT             : INDET.
-------------------------------------------
NO.  POSTE      NOM                   GRPE-  CENTRE     RESSOURC         PM/AC
===  ========== ===================== =====  =========  ===============  =======
  3  TDA-0004   BOIVIN, L.            SCY-4  257100     BASE                1.00
134  TDA-0167   RUDBACK,N.E.          EX-2   257100     BASE                1.00
 28  TDA-0148   MCLAREN, W.           ENG-6  257110     BASE                1.00
 29  TDA-0157   BEAUPRE, C.           SCY-2  257110     BASE                1.00
 31  TDA-0036   NISHIZAKI, R.         ENG-5  257110     BASE                0.00
 33  TDA-0035   ROWAN, R.             ENG-5  257110     BASE                1.00
 35  TDA-0149   DIBBLE, D.            ENG-5  257110     BASE                1.00
130  TDA-0101   GORE,N.               ENG-5  257110     ENERGIE             0.00
184  TDA-0029   REID, J.              ENG-5  257120     BASE                0.45
 39  TDA-0117   BEAULAC, H.           SCY-3  257120     BASE                1.00
 40  TDA-0033   AUDETTE, M.           ENG-5  257120     BASE                1.00
 44  TDA-0109   VERSAILLES, A.        ENG-5  257120     BASE                1.00
182  TDA-0147   AVNI, M.              ENG-6  257120     BASE                1.00
139  TDA-0317   POSLUNS, H.           ENG-5  257120     BASE                1.00
140  TDA-0028   MYERS, B.             ENG-5  257120     BASE                0.00
172  TDA-0034   MYERS, B.             ENG-5  257120     BASE                1.00
180  TDA-0028   MYERS, B.             ENG-5  257120     ENERGIE             0.00
157  TDA-0317   POSLUNS, H.           ENG-5  257120     ENERGIE             0.00
194  TDA-0319   (VACANT)              ENG-3  257130     BASE                0.00
197  TDA-0025   SABOUNGHI,R.          ENG-5  257130     BASE                1.00
 48  TDA-0050   MCLOUGHLIN, S.        SCY-2  257130     BASE                1.00
 50  TDA-0042   MARSHALL, B.          ES-5   257130     BASE                0.00
 52  TDA-0043   (VACANT)              ES-5   257130     BASE                0.00
158  TDA-0320   MARSHALL,B.           ENG-5  257130     BASE                1.00
211  TDA-0034   MARSHALL, B.          ENG-5  257130     BASE                0.00
 95  TDA-0025   SABOUNGHI, R.         ENG-5  257130     ENERGIE             0.00
  5  TDA-0116   VERVILLE, J.          SCY-3  257140     BASE                1.00
185  TDA-0330   KOSTA,G.              SCY-2  257140     BASE                1.00
 16  TDA-0128   SUEN, L.              ES-6   257140     BASE                1.00
 17  TDA-0206   (VACANT)              ES-3   257140     BASE                0.00
 24  TDA-0018   NOGRADY, J.           LS-3   257140     BASE                0.00
 25  TDA-0077   EKINS, G.             LS-2   257140     BASE                1.00
193  TDA-0329   SMITH,B.              PM-3   257140     BASE                1.00
 54  TDA-0144   SMITH, T.             ES-5   257140     BASE                1.00
 69  TDA-0208   (VACANT)              PM-2   257140     BASE                0.00
168  TDA-0322   (VACANT)              CS-3   257140     BASE                0.00
170  TDA-0325   (VACANT)              SCY-2  257140     BASE                0.00
129  TDA-0194   MORGAN,J.             ENG-5  257140     ENERGIE             0.00
186  TDA-0010   LEBLANC,M.            CR-2   257140A    BASE                1.00
 65  TDA-0126   FERLAND, N.           AS-4   257140A    BASE                1.00
 67  TDA-0074   THERRIEN, M.          GT-4   257140A    BASE                1.00
 68  TDA-0075   DORE, W.              DD-3   257140A    BASE                1.00
 70  TDA-0008   TASSE, J.             CR-5   257140A    BASE                0.00
```

5.10

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87/11/30 [13:48:10]                                                  Page 4

Liste pour : TYPE             : ALLOCATN
             STATUT           : INDET.
------------------------------------------
NO.  POSTE      NOM                   GRPE-  CENTRE      RESSOURC          PM/AC
===  ========== ====================  =====  ==========  ===============  =======
178  N/A        CREDIT                N/A    257140F     FINANCE            -3.00
 81  N/A        CREDIT                N/A    AUTORISE    BASE              -42.00
                                                                           =======
                                                                           -45.00
Total ( 2 Rec.) Pour STATUT          = INDET.

Liste pour : TYPE             : ALLOCATN
             STATUT           : TERME
------------------------------------------
NO.  POSTE      NOM                   GRPE-  CENTRE      RESSOURC          PM/AC
===  ========== ====================  =====  ==========  ===============  =======
 82  N/A        CREDIT                N/A    AUTORISE    ENERGIE            -0.32
                                                                           =======
                                                                            -0.32
Total ( 1 Rec.) Pour STATUT          = TERME


                                                                           =======
                                                                           -45.32
Total ( 3 Rec.) Pour TYPE            = ALLOCATN


                                                                           =======
                                                                             1.13
 *** GRAND Total( 87 Rec.) ***
```

(11)

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                    CENTRE DE DEVELOPPEMENT DES TRANSPORTS
              LISTE DES EMPLOYES PAR STATUT ET CATEGORIE PROFESSIONNELLE
                              UCT       1987
87/11/30 [13:56:29]
                                                                        Page 1

Liste pour : TYPE              : EMPLOYE
             STATUT            : INDET.
-------------------------------------------------
NO.  POSTE      NOM                   GRPE-  CENTRE     RESSOURC         PM/AC
===  ========== ===================== =====  ========== ===============  ======
 65  TDA-0126   FERLAND, N.           AS-4   257140A    BASE               1.00
186  TDA-0010   LEBLANC,M.            CR-2   257140A    BASE               1.00
 71  TDA-0054   DARAICHE, R.          CR-3   257140A    BASE               1.00
 61  TDA-0065   FORTIN, J.            CR-3   257140F    FINANCE            1.00
 73  TDA-0005   DAVELUY, S.           CR-4   257140A    BASE               1.00
201  TDA-0067   TAILLON,L.            CR-4   257140F    FINANCE            1.00
 59  TDA-0127   GERMIER, P.           CR-4   257140F    BASE               0.00
 60  TDA-0067   TAILLON, L.           CR-4   257140F    BASE               0.00
202  TDA-0127   GERMIER,P.            CR-4   257140F    FINANCE            1.00
 70  TDA-0008   TASSE, J.             CR-5   257140A    BASE               0.00
168  TDA-0322   (VACANT)              CS-3   257140     BASE               0.00
 68  TDA-0075   DORE, W.              DD-3   257140A    BASE               1.00
194  TDA-0319   (VACANT)              ENG-3  257130     BASE               0.00
 31  TDA-0036   NISHIZAKI, R.         ENG-5  257110     BASE               0.00
 33  TDA-0035   ROWAN, R.             ENG-5  257110     BASE               1.00
 35  TDA-0149   DIBBLE, D.            ENG-5  257110     BASE               1.00
130  TDA-0101   GORE,N.               ENG-5  257110     ENERGIE            0.00
184  TDA-0029   REID, J.              ENG-5  257120     BASE               0.45
 40  TDA-0033   AUDETTE, M.           ENG-5  257120     BASE               1.00
 44  TDA-0109   VERSAILLES, A.        ENG-5  257120     BASE               1.00
180  TDA-0028   MYERS, B.             ENG-5  257120     ENERGIE            0.00
157  TDA-0317   POSLUNS, H.           ENG-5  257120     ENERGIE            0.00
139  TDA-0317   POSLUNS, H.           ENG-5  257120     BASE               1.00
140  TDA-0028   MYERS, B.             ENG-5  257120     BASE               0.00
172  TDA-0034   MYERS, B.             ENG-5  257120     BASE               1.00
197  TDA-0025   SABOUNGHI,R.          ENG-5  257130     BASE               1.00
158  TDA-0320   MARSHALL,B.           ENG-5  257130     BASE               1.00
 95  TDA-0025   SABOUNGHI, R.         ENG-5  257130     ENERGIE            0.00
211  TDA-0034   MARSHALL, B.          ENG-5  257130     BASE               0.00
129  TDA-0194   MORGAN,J.             ENG-5  257140     ENERGIE            0.00
 34  TDA-0153   BAYLY, I.             ENG-5  257150     BASE               1.00
 41  TDA-0023   LAFRAMBOISE, J.       ENG-5  257150     BASE               1.00
 79  TDA-0024   STENSON, M.           ENG-5  257150     BASE               1.00
 28  TDA-0148   MCLAREN, W.           ENG-6  257110     BASE               1.00
182  TDA-0147   AVNI, M.              ENG-6  257120     BASE               1.00
203  TDA-0318   NISHIZAKI,R.          ENG-6  257150     BASE               1.00
162  TDA-0318   BERTRAND, R.          ENG-6  257150     BASE               0.00
 17  TDA-0206   (VACANT)              ES-3   257140     BASE               0.00
 50  TDA-0042   MARSHALL, B.          ES-5   257130     BASE               0.00
 52  TDA-0043   (VACANT)              ES-5   257130     BASE               0.00
 54  TDA-0144   SMITH, T.             ES-5   257140     BASE               1.00
 16  TDA-0128   SUEN, L.              ES-6   257140     BASE               1.00
134  TDA-0167   RUDBACK,N.E.          EX-2   257100     BASE               1.00
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5.11

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87/11/30 [13:56:29]                                          Page 4

Liste pour : TYPE             : ALLOCATN
             STATUT           : INDET.
------------------------------------------
NO.  POSTE       NOM                   GRPE-  CENTRE      RESSOURC          PM/AC
===  ==========  ====================  =====  ==========  ===============  =======
178  N/A         CREDIT                N/A    257140F     FINANCE            -3.00
 81  N/A         CREDIT                N/A    AUTORISE    BASE              -42.00
                                                                           =======
                                                                            -45.00
Total ( 2 Rec.) Pour STATUT          = INDET.

Liste pour : TYPE             : ALLOCATN
             STATUT           : TERME
------------------------------------------
NO.  POSTE       NOM                   GRPE-  CENTRE      RESSOURC          PM/AC
===  ==========  ====================  =====  ==========  ===============  =======
 82  N/A         CREDIT                N/A    AUTORISE    ENERGIE            -0.32
                                                                           =======
                                                                             -0.32
Total ( 1 Rec.) Pour STATUT          = TERME

                                                                           =======
                                                                            -45.32
Total ( 3 Rec.) Pour TYPE            = ALLOCATN

                                                                           =======
                                                                              1.13
 *** GRAND Total( 87 Rec.) ***
```

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CENTRE DE DEVELOPPEMENT DES TRANSPORTS (CDT)

TABLEAU DE L'UTILISATION DES PERSONNES - MOIS POUR OCT. 1987
ET PREVISIONS POUR LA FIN DE L'ANNEE FISCALE

	Employes du CDT - Mois en cours			Utilisation en P - M			Allocation autorisee en P - M				Prevision pour la fin de l'annee fiscale (en P-M)		
	Indeterminees	Termes	Total	Mois en en cours	Total prec. accum.	Total actuel acc.(A)	Mois en cours	Total prec. accu.	Total actuel acc.(B)	Variance actuelles acc.(A-B)	Utilisation	Allocations autorisees	Variance
AUTRE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BASE	33.45	6.00	39.45	39.45	194.56	234.01	-42.00	-252.00	-294.00	-59.99	500.23	-504.00	-3.77
DETACHEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ENERGIE	0.00	0.00	0.00	0.00	3.00	3.00	-0.32	-5.64	-5.96	-2.96	3.64	-5.96	-2.32
ETUDIANT	0.00	3.00	3.00	3.00	12.95	15.95	0.00	0.00	0.00	15.95	30.33	0.00	30.33
FINANCE	4.00	0.00	4.00	4.00	15.00	19.00	-3.00	-18.00	-21.00	-2.00	39.00	-36.00	3.00
TOTAL	37.45	9.00	46.45	46.45	225.51	271.96	-45.32	-275.64	-320.96	-49.00	573.20	-545.96	27.24

N.B. UN MONTANT NEGATIF INDIQUE UNE UTILISATION EN MOINS

5.12

(13)

JUIN

RESP. CENTRE DE RESPONSABILITE 257110

1987-88 PERSON-YEAR UTILISATION REPORT
RAPPORT D'UTILISATION DES ANNEES-PERSONNES POUR 1987-88

POSITION # / # DE POSTE	LEVEL / NIV.	STATUS / STATUT	NAME / NOM	APRIL / AVRIL	MAY / MAI	JUNE / JUIN	JULY / JUILL	AUG / AOUT	SEPT / SEPT	OCT / OCT	NOV / NOV	DEC / DEC	JAN / JAN	FEB / FEV	MAR / MARS	TOTAL	REMARKS/ REMARQUES
TDA-0148	ENG-6	INDET.	MCCARTH, W.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00	
TDA-0157	SCY-2	INDET.	BEAUPRE, C.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00	
TDA-0101	ENG-5	INDET.	GORE.H.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00	
TDA-0034	ENG-5	INDET.	NISHIZAKI, R.	1.00	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	INTERIM. POSTE TDA-0318 A PARTIR DU 18/05/87
TDA-0035	ENG-5	INDET.	ROWAN, R.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00	
TDA-0149	ENG-5	INDET.	DIBBLE, B.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00	
TDAC-0151	ENG-4	TERME	NOWICKI, C.	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	DU 1/01/87 AU 30/06/87
	SUBTOTAL		BASE	7.00	6.52	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	64.52	
	TOTAL PERSON-MONTH			7.00	6.52	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	64.52	

5.13

(3)

RESP. CENTRE DE RESPONSABILITE 257100

1987-88 PERSON-YEAR UTILISATION REPORT
RAPPORT D'UTILISATION DES ANNEES-PERSONNES POUR 1987-88

POSITION # / NO DE POSTE	LEVEL / NIV.	STATUS / STATUT	NAME / NOM	APRIL / AVRIL	MAY / MAI	JUNE / JUIN	JULY / JUILL	AUG / AOUT	SEPT / SEPT	OCT / OCT	NOV / NOV	DEC / DEC	JAN / JAN	FEB / FEV	MAR / MARS	TOTAL	REMARKS/ REMARQUES
TDA-0004	SCY-4	INDET.	BOIVIN, L.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00	
TDA-0167	EX-2	INDET.	RUDDACK, W.E.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00	
SUBTOTAL		BASE		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	24.00	
TOTAL PERSON-MONTH				2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	24.00	

```
87/11/30 [13:57:31]
                                                                                              Page 1
                                      CENTRE DE DEVELOPPEMENT DES TRANSPORTS
                                  RAPPORT MENSUEL DE LUTILISATION DES PERSONNES-MOIS
                                              OCT.      1987

Liste pour : RESSOURC          : BASE
             TYPE              : EMPLOYE
-----------------------------------------------
NO. POSTE      GRPE- NOM                  CENTRE     STATUT     PM/AC   REMARQUE
=== ========== ===== ==================== ========== ========== ======= ================================================
  3 TDA-0004   SCY-4 BOIVIN, L.           257100     INDET.        1.00
134 TDA-0167   EX-2  RUDBACK,N.E.         257100     INDET.        1.00
 28 TDA-0148   ENG-6 MCLAREN, W.          257110     INDET.        1.00
 29 TDA-0157   SCY-2 BEAUPRE, C.          257110     INDET.        1.00
 31 TDA-0036   ENG-5 NISHIZAKI, R.        257110     INDET.        0.00 INTERIM. POSTE TDA-0318 A PARTIR DU 18/05/87
 33 TDA-0035   ENG-5 ROWAN, R.            257110     INDET.        1.00
 35 TDA-0149   ENG-5 DIBBLE, D.           257110     INDET.        1.00
                                                                ======
                                                                   6.00
Total ( 7 Rec.) Pour TYPE          = EMPLOYE


                                                                ======
                                                                   6.00
Total ( 7 Rec.) Pour RESSOURC      = BASE
```

5.14

```
                           CENTRE DE DEVELOPPEMENT DES TRANSPORTS
                        RAPPORT MENSUEL DE LUTILISATION DES PERSONNES-MOIS
                                    OCT.      1987

Liste pour : RESSOURC         : BASE
             TYPE             : EMPLOYE
-------------------------------------------------------
NO.  POSTE       GRPE-  NOM                   CENTRE      STATUT      PM/AC    REMARQUE
===  ==========  =====  ====================  ==========  ==========  =======  ================================================
203  TDA-0318    ENG-6  NISHIZAKI,R.          257150      INDET.         1.00  INTERIM. A PARTIR DU 18/05/87
 79  TDA-0024    ENG-5  STENSON, M.           257150      INDET.         1.00  T.O.S. LE 28/09/87
206  TDAC-0161   ENG-5  PIERCE,T.             257150      TERME          1.00  DECRET DU 25/6/87 AU 23/12/87 POSTE DE 257130
162  TDA-0318    ENG-6  BERTRAND, R.          257150      INDET.         0.00  LWOP A PARTIR DU 8/06/87
171  TDA-0079    ENG-5  SEMERY, P.            257150      TERME          1.00  DU 14/01/87 AU 13/01/88
                                                                      =======
                                                                         4.00
Total ( 5 Rec.) Pour TYPE           = EMPLOYE


                                                                      =======
                                                                         4.00
Total ( 5 Rec.) Pour RESSOURC       = BASE


                                                                      =======
                                                                         1.13
 *** GRAND Total( 87 Rec.) ***
```

```
                       *** MENU pour MAJ              ***
                       ----------------------------------

  1- Pour referer aux donnees 84/85      2- Pour referer aux donnees 85/86
  3- Pour referer aux donnees 86/87      4- pour referer aux donneeS 83/84
  5- pour referer aux donnees 87/88      6- Pour entrer un nouveau record
  7- Pour modifier un record             8- Pour voir un record
  9- Pour EFFACER un record             10- Met a ZERO un record
 11- LISTE DES DOSSIERS ALPHABETIQU

Choisissez une fonction->
```

(11)

```
87/11/30 [14:49:04]                                                       Page 1
NO.  NOM                    CENTRE      GRPE-  POSTE
===  ====================   ==========  =====  ==========
 58  (EN DOTATION)          257140F     FI-1   TDA-0314
173  (VACANT)               257150      ES-5   TDAC-0155
194  (VACANT)               257130      ENG-3  TDA-0317
127  (VACANT)               257150      ENG-5  TDA-0079
 17  (VACANT)               257140      ES-3   TDA-0206
196  (VACANT)               257130      ENG-5  TDAC-0161
132  (VACANT)               257140      ES-3   TDAC-0154
 52  (VACANT)               257130      ES-5   TDA-0043
 69  (VACANT)               257140      PM-2   TDA-0208
208  (VACANT)               257140             COOP
161  (VACANT)               257140      SI-1   TDA-0301
168  (VACANT)               257140      CS-3   TDA-0322
170  (VACANT)               257140      SCY-2  TDA-0325
 40  AUDETTE, M.            257120      ENG-5  TDA-0033
182  AVNI, M.               257120      ENG-6  TDA-0147
106  BARIBAULT, M.          257140A     CR-2   TDA-0010
 34  BAYLY, I.              257150      ENG-5  TDA-0153
 39  BEAULAC, H.            257120      SCY-3  TDA-0117
 29  BEAUPRE, C.            257110      SCY-2  TDA-0157
162  BERTRAND, R.           257150      ENG-6  TDA-0318
  3  BOIVIN, L.             257100      SCY-4  TDA-0004
200  BROWN,E.               257130             COOP
178  CREDIT                 257140F     N/A    N/A
 81  CREDIT                 AUTORISE    N/A    N/A
 82  CREDIT                 AUTORISE    N/A    N/A
 71  DARAICHE, R.           257140A     CR-3   TDA-0054
 73  DAVELUY, S.            257140A     CR-4   TDA-0005
188  DERY, S.               257130             COOP
189  DESJARDINS, S.         257140A            COOP
 35  DIBBLE, D.             257110      ENG-5  TDA-0149
 68  DORE, W.               257140A     DD-3   TDA-0075
190  DUCLOS, G.             257150             COOP
199  DUPUIS, J.             257140F            COOP
 90  EGGLETON, P.L.         INDEF.      N/A    N/A
 25  EKINS, G.              257140      LS-2   TDA-0077
 65  FERLAND, N.            257140A     AS-4   TDA-0126
 61  FORTIN, J.             257140F     CR-3   TDA-0065
 59  GERMIER, P.            257140F     CR-4   TDA-0127
202  GERMIER,P.             257140F     CR-4   TDA-0127
120  GORE,N.                257110      ENG-5  TDA-0101
130  GORE,N.                257110      ENG-5  TDA-0101
209  JOLY, M.F.             257130      ES-3   TDAC-0170
167  KOSTA, G.              257140      SCY-2  TDAC-0135
185  KOSTA,G.               257140      SCY-2  TDA-0330
 41  LAFRAMBOISE, J.        257150      ENG-5  TDA-0023
207  LE THANH, H.           257130             COOP
186  LEBLANC,M.             257140A     CR-2   TDA-0010
210  LECLERC, L.            257140A     CR-3   TDA-0054
187  MARCOUX,J.R.           257140      PM-4
 50  MARSHALL, B.           257130      ES-5   TDA-0042
211  MARSHALL, B.           257130      ENG-5  TDA-0034
158  MARSHALL,B.            257130      ENG-5  TDA-0320
```

5.15

APPENDIX A - SECTION 6.1

```
                         MENU PRINCIPAL
   1. MLS

   2. SAB/LAS

   3. AV_COLLECTION

   4. SCS







Use space bar, arrow keys, or type number to make selection.
Enter 'b' to return to previous menu or exit.
Enter carriage return to execute selection:  1
```

```
                                   MLS
     1. MENU MLS POUR LISTES

     2. MENU MLS POUR ETIQUETTES CANADIENNES

     3. MENU MLS POUR ETIQUETTES ETRANGERES









Use space bar, arrow keys, or type number to make selection.
Enter 'b' to return to previous menu or exit.
Enter carriage return to execute selection:  1
```

```
                                MLS
    1. RECHERCHE, ADDITION, MISE A JOUR, RETRAIT
    2. Recherche par 'USAGE', trie par COMPANY
    3. Recherche par 'USAGE', trie par POST_CODE
    4. liste tous les records, trie par LAST_NAME
    5. liste tous les records, trie par COMPANY
    6. liste tous les records, tric par POST_CODE
    7.
    8. imprimer une liste pour 1 ou + 'USAGE' et 1 'MODAL_INT'
    9. liste tous les records pour 1 'USAGE' et 1 'TRANS_TYPE'
   10.
   11. liste pour 'USAGE' & 'PROVINCE', en ordre de compagnie



Use space bar, arrow keys, or type number to make selection.
Enter 'b' to return to previous menu or exit.
Enter carriage return to execute selection:  1
```

```
Query Next Previous Add Update Remove File Screen Current Master Detail
     Output Bye                                   ** 1: mlsxl file**

ID_NUMBER [0    ]           LAST_UPDAT [00/00/00]
GENDER    FIRST_NAME        LAST_NAME                  INITIAL
[     ]   [               ] [                         ] [          ]
TITLE     [                                         ]

COMPANY   [                                         ]
          [                                         ]
          [                                         ]
ADDRESS_1 [                                         ]
ADDRESS_2 [                                         ]
CITY      [                          ]  PROVINCE  [                 ]
COUNTRY   [                    ]        POST_CODE [          ]

AREA_CODE PHONE      TRANS_TYPE  MODAL_INT   RES_ACT              ORG_TYPE
  [   ]   [        ] [     ]   [          ] [                   ] [      ]

USAGE [               ]   COPIES_FRE [0 ]  COPIES_ENG [0 ]  LANG_PRE [ ]
NOTES [                                                              ]
      [               ]
```

6.1.1

```
                         MENU MLS POUR ETIQUETTES CANADIENNES
      1. IMPRIMER 1 ETIQUETTE CANADIENNE PLUSIEURS FOIS
      2. IMPRIMER LES ETIQUETTES CANADIENNES POUR UN "USAGE"
      3. IMPRIMER LES ETIQUETTES CANADIENNES "POST_CODE" & "USAGE"
      4. IMPRIMER LES ETIQUETTES CANADIENNES "USAGE" & "MODAL_INT"
      5. IMPRIMER LES ETIQUETTES CANADIENNES "USAGE" & "TRANS_TYPE"
      6. ETIQUETTES POUR T.C. (OTTAWA), BILINGUE
      7. ETIQUETTES T.C. (OTTAWA), FRANCAIS, ANGLAIS
      8. ETIQUETTES POUR CANADA, SANS T.C. (OTTAWA), BILINGUE
      9. ETIQUETTES POUR CANADA, SANS T.C. (OTTAWA), FRANCAIS,ANGLAIS
     10.




Use space bar, arrow keys, or type number to make selection.
Enter 'b' to return to previous menu or exit.
Enter carriage return to execute selection:  1
```

```
                         MENU MLS POUR ETIQUETTES ETRANGERES

      1. IMPRIMER LES ETIQUETTES POUR L'ETRANGER, BILINGUE
      2. IMPRIMER LES ETIQUETTES POUR L'ETRANGER, FRANCAIS, ANGLAIS
      3. IMPRIMER UNE ETIQUETTE ETRANGERE PLUSIEURS FOIS
      4. IMPRIMER LES ETIQUETTES ETRANGERE POUR UN "USAGE"
      5. IMPRIMER LES ETIQUETTES ETRANGERE "USAGE" & "MODAL_INT"
      6. IMPRIMER LES ETIQUETTES ETRANGERES "USAGE" & "TRANS_TYPE"







Use space bar, arrow keys, or type number to make selection.
Enter 'b' to return to previous menu or exit.
Enter carriage return to execute selection:  1
```

APPENDIX A - SECTION 6.2

```
                                    SAB/LAS
       1. RECHERCHER, AJOUTER, METTRE A JOUR, ENLEVER UN RECORD

       2. IMPRESSION D'UN BON DE COMMANDE

       3. IMPRESSION DE PLUSIEURS BONS DE COMMANDE

       4. GENERATION DES LETTRES DE RECLAMATION

       5. CHANGEMENT DE STATUT - ECRAN SIMPLIFIE




    Use space bar, arrow keys, or type number to make selection.
    Enter 'b' to return to previous menu or exit.
    Enter carriage return to execute selection:  ]
```

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TRANSPORTATION DEVELOPMENT CENTRE

COMPUTER SYSTEMS REQUIREMENTS AND RECOMMENDATIONS

VOLUME 4 OF 4

APPENDIX B: MIS SYSTEM INPUTS

APPENDIX C: MIS DATABASES

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APPENDIX B: MIS SYSTEM INPUTS

APPENDIX B - SECTION 1

```
                    *** MENU pour MAJ/OPL          ***
                    ---------------------------------

  1- EDIT UN "OBJECTIVE" ANGLAIS          2- MODIF.->"MODE TITLE" ANGLAIS
  3- To DELETE a MEC #                    4- POUR CORRIGER LES  M.E.C. #
  5- CREE-> "MODAL CODE" ANG.+FRAN.       6- CREE UN "OBJECTIVE"
  7- IMPRIME LES TEXTES "OBJECTIVE"       8- MODIF."TITRE DU MODE" FRANCAIS
  9- EDIT UN "OBJECTIF" FRANCAIS         10- MODIF D'UN "OBJECTIVE" ANGLAIS
 11- MODIF PLANNED DOLLARS               12- MODIF D'UN "OBJECTIVE"FRANCAIS
 13- DISPLAY OP/PLAN FOR A MODE

Choisissez une fonction->
```

OBJECTIVE - OBJECTIF

M.E.C. #

TITLE:

TEXT:

TITRE:

TEXTE:

HF01-05/84

TARGET SCREEN FOR MEC

TARGET :

BUT :

STR. TARGET :

BUT STR. :

KF01-11/84

DEFINITION DE LINFORMATION #

DESCRIPTION

DEFINITION

DF01-82/06

FUNDS LY   FUNDS CY   FUNDS NY

HE03-11/85

```
                    *** MENU pour FORTIN          ***
                    ----------------------------------

  1- POUR ASSIGNER UN "DSS OFFICE"

Choisissez une fonction->
```

```
                 MISE A JOUR DES 'DSS OFFICES'
                 =============================
#DE PROJET    CONTRACTANT                      #DU CENTRE RSPB.

AGENT DE PROJ.   TITRE DU PROJCT                 VALEUR $

# REQUISITION      # DOSSIER     DSS OFFICE

-------------------------------------------------------------------------
                                                           IF02-11/84
```

APPENDIX B - SECTION 2

```
                   *** MENU pour MAJ/PPF          ***
                   -----------------------------------

 1- INSERT A NEW PROPOSAL              2- DELETE PROPOSAL PROJECT
 3- TO MODIFY A PROPOSAL               4- EDTDC COMMENTS
 5- PROPOSED PROJ. BY RSPB CENTER      6- PROPOSED PROJECTS BY MODE

Choisissez une fonction->
```

```
                PROPOSALS
                =========
RSPB. #          MODE ID          OFFICER NAME
......           ..........       ..........
CHIEF'S NAME         CONTRACTOR         EST $ COST
...........    ....................     .........
          DATE PLAN
......  ......  ......  ......
..................................................
                DESCRIPTION
..................................................
..................................................
..................................................
..................................................
..................................................
..................................................

REF.#.....                               BF01 06/85
```

```
                   PROPOSALS
                   =========
RSPB. #          MODE ID           OFFICER NAME
CNTR.#          UNCODED
CHIEF'S NAME         CONTRACTOR            EST $ COST
                                                    0
          DATE PLAN
MMM/YY
...............................................
              DESCRIPTION




REF.#  255                                BF01 06/85
```

PROPOSALS
=========

EDTDC COMMENTS

REF .....

....
....
....
....
....
....
....

BF06 06/85

APPENDIX B - SECTION 2.1

```
                        *** MENU pour TDPP-EH         ***
                        ----------------------------------

  1- MAJ ET IMPRESSION RAPPORT E&H       2- TRANSACTION pour un CONTRACT
  3- REFERENCE AUX ANNEES FISCALS

Choisissez une fonction->
```

+DPP-

O

```
TDC Disabled and Elderly research projects 1986/67
***************************************************

                 ---------------
                 - MISE A JOUR -
                 ---------------


        1- MODIFICATION DE MONTANT(S) AUTORISE(S)

        2- ELIMINATION DE PROJET(S) DU RAPPORT E&H


           VOTRE CHOIX:
```

```
TDC Disabled and Elderly research projects 1986/87
==================================================

                  --------
                  - MENU -
                  --------


         1- CREATION DE PROJETS

         2- MISE A JOUR DE PROJETS E & H

         3- IMPRESSION DU RAPPORT

         VOTRE CHOIX:
```

H3-910L.003

```
TDC Disabled and Elderly research projects 1966/87
==================================================

               ---------------
               - MISE A JOUR -
               ---------------


          1- PROJETS EN COURS OU TERMINES

          2- PROJETS FUTURS (# CONTRAT = 9999)


          VOTRE CHOIX:
```

```
TDC Disabled and Elderly research projects 1986/87
--------------------------------------------------

-------------------------------------------------------------------------
|   NO PROJET        TACHE (Oui/Non)     NO TACHE    MONTANT AUTORISE   |
|                                                                       |
|      MONTANT RECUPERE                  TITRE DU PROJET                |
|                                                                       |
-------------------------------------------------------------------------
                                                        ENT/EH-03/87
```

APPENDIX B - SECTION 3

APPENDIX B - SECTION 3.1

```
                         *** MENU pour MAJ              ***
                         -----------------------------------

    1- INSERER une FACTURE                 2- INSERER la date recu (facture)
    3- MODIFIER une FACTURE                4- INSERE une REQ/AGREEMENT
    5- MODIFIER une REQUISITION            6- VOIR REQUISITION ou ENTENTE
    7- VOIR une FACTURE                    8- CHERCHER une FACTURE
    9- CHERCHER une REQUISITION           10- FACTURE EN PREINVOICE
   11- INSERER la date recu (contrat)     12- CHERCHER UNE NUMERO DE REQUISI
   13- FAIRE LES LIENS AVEC CONTRAT       14- MODIFICATION DU # DE CONTROLE

Choisissez une fonction->
```

4 -
5 -
6 -
9 -
11 -

REQUISITION

# PROJET	CNT RESP.	# DOSSIER	# REQUISITION
9999	N/A	N/A	7-7504
TYPE DE REQ.	NOM DE CONTRACTANT		DSS OFFICE
MOD#1	SANS CONTRACTANT		DSS-MTL
TITRE DE PROJET		AGENT DE PROJET	
N/A		N/A	
DATE TELEX	ACC. RECP	DATE ENVOI	DATE RECU
MONTANT REQ.	ORGANISME PARRAINANT		COMMENTAIRES

QF01 12/84

APPENDIX B - SECTION 3.2

*** MENU MAJ ***

```
 1- "PRE-INVOICE" Procedure              2- "REVISED INCURRED" Procedure
 3- "CORRECT INVOICE" Procedure          4- "HOLDBACK" Procedure
 5- TRANS.<83 pour un CONTRAT            6- "AMENDMENT" of a contract.
 7- Recalcul du numero d'ACTIVITE        8- "INVOICE" Procedure
 9- Copie un contrat de FY 86->87       10- TRANSACTION pour un CONTRACT
11- Creation d'un nouvel ORGANISME      12- initialiser le mois
13- "DIRECT INVOICE" procedure          14- Changement De Date /STATUS RPT
15- CHERCHER LES CNTS PAR REQUISI.      16- CREATION D'UN "TIES"
17- MODIF. A UN "TIES"/FIN "CAPAF"      18- MAJ DU FICHIER "TIES"/#PROJET
19- TRANS. POUR "TIES" OU "CAPAFE"      20- Changement de Statut/Fermeture
21- MODIFICATION CARTE MAITRESSE        22- REFERENCE AUX ANNEES FISCALS
23- MAJ MIS FORM (PAGE 2 & 3)           24- MAJ MIS FORM (PAGE 1 & 2)
25- MOD D'ADRESSE "ORG. PARRAINANT      26- CREATION D'UN ORG. PARRAINANT
27- MAJ MIS FORM (PAGE 4)               28- CREATE PROJECT RELATED INFO.
29- MONTANT PAYE CONTRE LA CAPAFE       30- Creation d'un NOUVEAU Contrat
31- FAIRE LES LIENS D'UN "TIES"         32- Revision d'un "NOUVEAU"
33- DULPICATION D'UN CONTRAT            34- Acceptation d'un Contrat/amend
35- "PRE-HOLD" PROCEDURE                36- MODIFICATION DU # FACTURE
37- CREE UN "MODAL OBJ. CATEGORIE"      38- MODIFY "MODAL OBJ. CATEGORIE"
39- Revision des Fonds de Contrat       40- PRINT MIS FORMS

Choisissez une fonction->
```

```
.------------------------------------------------------------------------.
|                                                                        |
|                          CONTRACT INSERTION                             |
|                          ------------------                             |
|   CONTRACT #    RSPB.CNTR.     BRANCH     DIVISION      PROJECT OFFICER |
|                                                                        |
|           CONTRACT TITLE                    FILE NO.                   |
|                                                                        |
|------------------------------------------------------------------------|
|     EST$CY            EST$CY+1            EST$CY+2+           TOT$AUTH  |
|                                                                        |
|    SPONSOR           M E C CODE          F.E.     LINE OBJ.            |
|                                                                        |
|------------------------------------------------------------------------|
|         A-I-P DATE         SIGN DATE            ORIGIN                 |
|                                                                        |
.------------------------------------------------------------------------.
                                                          CF09-03/87
```

APPENDIX B - SECTION 3.3

```
*** MENU MAJ ***

 1- "PRE-INVOICE" Procedure              2- "REVISED INCURRED" Procedure
 3- "CORRECT INVOICE" Procedure          4- "HOLDBACK" Procedure
 5- TRANS.<83 pour un CONTRAT            6- "AMENDMENT" of a contract.
 7- Recalcul du numero d'ACTIVITE        8- "INVOICE" Procedure
 9- Copie un contrat de FY 86->87       10- TRANSACTION pour un CONTRACT
11- Creation d'un nouvel ORGANISME      12- initialiser le mois
13- "DIRECT INVOICE" procedure          14- Changement De Date /STATUS RPT
15- CHERCHER LES CNTS PAR REQUISI.      16- CREATION D'UN "TIES"
17- MODIF. À UN "TIES"/FIN "CAPAF"      18- MAJ DU FICHIER "TIES"/#PROJET
19- TRANS. POUR "TIES" OU "CAPAFE"      20- Changement de Statut/Fermeture
21- MODIFICATION CARTE MAITRESSE        22- REFERENCE AUX ANNEES FISCALS
23- MAJ MIS FORM (PAGE 2 & 3)           24- MAJ MIS FORM (PAGE 1 & 2)
25- MOD D'ADRESSE "ORG. PARRAINANT      26- CREATION D'UN ORG. PARRAINANT
27- MAJ MIS FORM (PAGE 4)               28- CREATE PROJECT RELATED INFO.
29- MONTANT PAYE CONTRE LA CAPAFE       30- Creation d'un NOUVEAU Contrat
31- FAIRE LES LIENS D'UN "TIES"         32- Revision d'un "NOUVEAU"
33- DULPICATION D'UN CONTRAT            34- Acceptation d'un Contrat/amend
35- "PRE-HOLD" PROCEDURE                36- MODIFICATION DU # FACTURE
37- CREE UN "MODAL OBJ. CATEGORIE"      38- MODIFY "MODAL OBJ. CATEGORIE"
39- Revision des Fonds de Contrat       40- PRINT MIS FORMS

Choisissez une fonction->
```

A M E N D M E N T

TOT$AUTH	BGT$CY	BGT$CY+1	BGT$FUT	FUND EXPIR

OPT. 6

```
                         A M E N D M E N T
TOT$AUTH      BGT$CY       BGT$CY+1     BGT$FUT     REQ. DATE   NEW CNT ID
```

OPT.6

```
                    C O N T A C C E P T

TOT$AUTH      BGT$CY      BGT$CY+1     BGT$FUT      REQ.DATE  MOIS/DEBUT
```

olT.34

```
                         C O N T A C C E P T
  TOT$AUTH       BGT$CY      BGT$CY+1      BGT$FUT      AMEND DT    FINALDEL
FUND EXPIR     AMEND#      MOIS/AMEND
```

OPT. 34

```
AGREE.SIGN.DATE        FUND EXPIR
```

AGREE.REG.DATE	FUND EXPIR	# ORG PARRAINANT

APPENDIX B - SECTION 3.4

```
                     *** MENU pour NARRATIF         ***
                     ----------------------------------

  1- DUPLICATER UNE REMARGUE            2- duplicater un " SCOPE "
  3- ELIMINER UNE REMARGUE              4- Duplicater un "PURPOSE"
  5- Modification d'un "Purpose"        6- EDIT d'un "PROJECT OBJECTIVE"
  7- EDIT d'un "SCOPE"                  8- Duplicater un "PROJ .Obj."
  9- Creation des SCOPE & PROJ.OBJ.    10- Entree les "REMARGUES"
 11- PROFILE SHEET VERIFICATION        12- MODIF d'un "PROJECT OBJECTIVE"
 13- MODIFICATION d'un "SCOPE"         14- MODIF.DE L'ADRESSE D'ORGAMINSM
 15- TRANSACTION pour un CONTRACT      16- REFERENCE AUX ANNEES FISCALS

Choisissez une fonction->
```

SCOPE POUR LE PROJET #

AF01-01/83

REMARQUE DE L OFFICIER DE PROJET   POUR LE PROJET #

OPT. 10, 1

SCOPE POUR LE PROJET #

AF01-01/83

PROJECT OBJECTIVE POUR LE PROJET #

MF01-01/83

PERFORMING ORGANIZATION

REF#   NAME

ADDRESS (head office)

CITY, PROVINCE/STATE

POSTAL/ZIP CODE

OPT. 14

APPENDIX B - SECTION 3.5

*** MENU MAJ ***

```
 1- "PRE-INVOICE" Procedure            2- "REVISED INCURRED" Procedure
 3- "CORRECT INVOICE" Procedure        4- "HOLDBACK" Procedure
 5- TRANS.<83 pour un CONTRAT          6- "AMENDMENT" of a contract.
 7- Recalcul du numero d'ACTIVITE      8- "INVOICE" Procedure
 9- Copie un contrat de FY 86->87     10- TRANSACTION pour un CONTRACT
11- Creation d'un nouvel ORGANISME    12- initialiser le mois
13- "DIRECT INVOICE" procedure        14- Changement De Date /STATUS RPT
15- CHERCHER LES CNTS PAR REQUISI.    16- CREATION D'UN "TIES"
17- MODIF. À UN "TIES"/FIN "CAPAF"    18- MAJ DU FICHIER "TIES"/#PROJET
19- TRANS. POUR "TIES" OU "CAPAFE"    20- Changement de Statut/Fermeture
21- MODIFICATION CARTE MAITRESSE      22- REFERENCE AUX ANNEES FISCALS
23- MAJ MIS FORM (PAGE 2 & 3)         24- MAJ MIS FORM (PAGE 1 & 2)
25- MOD D'ADRESSE "ORG. PARRAINANT    26- CREATION D'UN ORG. PARRAINANT
27- MAJ MIS FORM (PAGE 4)             28- CREATE PROJECT RELATED INFO.
29- MONTANT PAYE CONTRE LA CAPAFE     30- Creation d'un NOUVEAU Contrat
31- FAIRE LES LIENS D'UN "TIES"       32- Revision d'un "NOUVEAU"
33- DULPICATION D'UN CONTRAT          34- Acceptation d'un Contrat/amend
35- "PRE-HOLD" PROCEDURE              36- MODIFICATION DU # FACTURE
37- CREE UN "MODAL OBJ. CATEGORIE"    38- MODIFY "MODAL OBJ. CATEGORIE"
39- Revision des fonds de Contrat     40- PRINT MIS FORMS

Choisissez une fonction->
```

```
                    ORGANISME PARRAINANT
                    ====================
TYPE DORGANISME

NOM DU 'SPONSOR'


ADRESSE ligne 1

ADRESSE ligne 2

VILLE OU PROVINCE

CODE POSTAL

........................................
                             TY01-02/87
```

MIS PROJECT ENTRY FORM

PERFORMING ORGANIZATION

REF#   NAME

ADDRESS (head office)

CITY, PROVINCE/STATE

POSTAL/ZIP CODE

CONTACT PERSON

CONTACT'S PHONE #

CONTRACTOR'S WORKING LANGUAGE   LOCATION

ORGANIZATION TYPE   TYPE OF CONTRACT

OF01

```
                     MIS PROJECT ENTRY FORM
PERFORMING ORGANIZATION

NB: TO CREATE A NEW CONTRACTOR ENTER NUMBER 1 AND PRESS [CR], TO MODIFY
    ADDRESS OF AN EXISTING CONTRACTOR ENTER NUMBER 2 AND PRESS [CR], TO
    REPLACE A CONTRACTOR BY AN OTHER EXISTING ONE ENTER HIS REFERENCE
    NUMBER AND PRESS [CR] OR TO LEAVE UNCHANGED PRESS [CR].

REF#       NAME

ADDRESS (head office)


CITY, PROVINCE/STATE                        POSTAL CODE

CONTACT PERSON                              PHONE #

CONTRACTOR'S WORKING LANGUAGE            LOCATION

ORGANIZATION TYPE              TYPE OF CONTRACT
SCHEDULE:    start date       draft due          final del. date
                                                                CF55
```

```
          MIS PROJECT ENTRY FORM RELATED TO PROJECT#

      SCIENTIFIC/TECHNOLOGICAL CLASSIFICATION

      SCIENCE             EXTERNAL COST SHARING/CONTRIBUTION

                           TOTAL EST CONTRIB.          DESCRIPTION

      INDUSTRY

      PROV/MUN

      FOREIGN

      OTHER

      AREA OF BENEFIT  1ST              2ND             3RD

      USER OF RESULTS                    AREA OF IMPACT
                                                                CF44
```

```
                    MIS PROJECT ENTRY FORM

NB: FOR A. AND F. ENTER THOSE NUMBERS THAT HAVE BEEN CKECKED OFF BY OFFICERS,
    NUMBERS CAN BE ENTERED ONE AFTER ANOTHER WITHOUT LEAVING GAPS.

PROJECT DELIVERABLES
--------------------
A.

PUBLICATION REQUIREMENTS
------------------------
A. FINAL REPORT  : ENGLISH      FRENCH      BILINGUAL
B. INTERIM REPORT: ENGLISH      FRENCH      BILINGUAL
C. SUMMARY REPORT: ENGLISH      FRENCH      BILINGUAL
D. SPECIAL PRINT, AUDIO-VISUAL:
E. CONTRACTOR RESPONSIBLE FOR TRANSLATION :
F. TDC SERVICE :


LANGUAGE REQUIREMENTS
---------------------
FINAL REPORT  :              ITERIM REPORT :                   DF33-04/87
```

```
 -------------------------------------------------------------------------
|              REVISION DE LA DISTRIBUTION DES COUTS                      |
|-------------------------------------------------------------------------|
|   CONTRAT #         CENTRE DE RESPONSABILITE           STATUT           |
|                                                                         |
|-------------------------------------------------------------------------|
|                                                                         |
|                          ACTUEL                ESTIMATION DES O.P.      |
|                          ------                -------------------      |
| BUDGET ANNEE COURANTE              (CY)                      (CY)       |
|                                                                         |
| BUDGET ANNEE SUIVANTE              (CY+1)                    (CY+1)     |
|                                                                         |
| BUDGET ANNEE SUBSEQUENTE           (CY+1+)                   (CY+2+)    |
|                                                                         |
 -------------------------------------------------------------------------
                                              CF07-07/83
```

```
CONTRAT #                    RSPB CNT:

CONTRACTANT->

NOUVEAU STATUT POUR CE CONTRAT->

TOTAL AUTORISE $

CUMULATIF DE LANNEE COURANTE $

BUDGET DE LANNEE COURANTE $

TOTAL DES DEPENSES $

BALANCE DU TOTAL AUTORISE $

TOTAL CUMULATIF DES RETENUES $

BALANCE DE LANNEE COURANTE $
```

OPT. 20

```
                        FICHE POUR UN 'TIES'/'CAPAFE'
                        =============================

PROJET#  DATA DEBUT$  DATE FIN$ TASK#CAP    #SERIE DU CONTRAT

MONTANT AUTH.   RETENUE DU TASK     BALANCE      DUREE       STATUT

TITRE DU TASK                    AGENT/TASK

                                                        TF01-07/86
```

```
                    A NEW PROJECT OFFICER
                    =====================

BEFORE ENTERING THE NEW PROJECT OFFICER'S NAME ,
PLEASE FOLLOW THE FOLLOWWING INSTRUCTIONS.

1 - A PROJECT OFFICER IS IDENTIFIED BY HIS LAST NAME ONLY
2 - AVOID USING COMMAS AND POINTS.
3 - IF THERE ARE TWO PEOLPE WITH THE SAME LAST NAME,THEY
    WILL BE IDENTIFIED IN THE FOLLOWING FORMAT.
               eg. SMITH T

ONE BLANK SPACE BETWEEN LAST NAME AND INITIAL.


PLEASE ENTER THE NEW PROJECT OFFICER'S NAME.
ENTER P.O.'S LANGUAGE :            0 = ENGLISH  1 = FRENCH

                                                    PF01-05/87
```

APPENDIX B - SECTION 3.6

```
                          *** MENU pour MAJ              ***
                          -----------------------------------

  1- INSERER une FACTURE                    2- INSERER la date recu (facture)
  3- MODIFIER une FACTURE                   4- INSERE une REQ/AGREEMENT
  5- MODIFIER une REQUISITION               6- VOIR REQUISITION ou ENTENTE
  7- VOIR une FACTURE                       8- CHERCHER une FACTURE
  9- CHERCHER une REQUISITION              10- FACTURE EN PREINVOICE
 11- INSERER la date recu (contrat)        12- CHERCHER UNE NUMERO DE REQUISI
 13- FAIRE LES LIENS AVEC CONTRAT          14- MODIFICATION DU # DE CONTROLE

Choisissez une fonction->
```

1 -
2 -
3 -
7 -
8 -
10 -

```
---------------------------------------------------------------------------
|                                                                         |
|                          FACTURE                                        |
|                          =======                                        |
|                                                                         |
|    DATE ENVOI        AGENT DE PROJET          NOM DU CONTRACTANT        |
|     87/11/04            N/A               SANS CONTRACTANT              |
|                                                                         |
|         ADMIN. REGIONAL          # PROJET         # REQUISITION         |
|                                   9999              7-7504              |
|                                                                         |
|                             DATE DE LA                                  |
|    # FACTURE                  FACTURE       CENTRE DE RESP.    # DOSSIER|
|   1                         0                    N/A          N/A       |
|                                                                         |
|       INCLUANT                                                          |
|       HOLDBACK        DATE RECU           ORGANISME PARRAINANT          |
|           0.00        00/00/00      SANS 'ORGANISME PARRAINANT'         |
|                                                                         |
---------------------------------------------------------------------------
                                                          FF01-12/84
```

APPENDIX B - SECTION 3.7

```
                         AAA MENU pour MAJ/SITE VISIT   AAA
                         -----------------------------------

   1- DESIGNATE PROJ. FOR SITE VISIT      2- MODIFY SITE VISIT INFORMATION

Choisissez une fonction->
```

```
                    SITE VISIT DETAILS.
                    ===================
             PROJECT# .....    ..............................

             Please enter specific details about the project
             in the following space.
             Note that you will be asked to respond to futher
             questions after pressing [CR] at the last line.

                  (Capitalized letters.)
             DETAILS : ..............................

                       ..............................

                       ..............................

                       ..............................          EFI01-11/86
     Commande=
                           ADDRESS FOR SITE VISIT
                           ======================
                 .....     .............................

                 SITE ADDRESS (Capitalized letters.)
                 .............................
                 Address line 1
                 .............................
                 Address line 2
                 ...................
                 City, province
                 Postal code ....... Telephone # ............

                 CONTACT PERSON. ....................

     MUNICIPAL LOCATION OF VISIT ....................
     (Use capitalized letters and avoid abbreviations where possible)

     1=YUK/NWT 2=BC 3=ALBTA 4=SASK 5=MAN 6=ONT 7=QUE 8=NB 9=NS 10=PEI 11=NFLD
     PROVINCIAL LOCATION OF VISIT ..........
     (Enter one of the above code numbers.)
                                                  EFI02-11/86

Commande=
                         SITE VISIT DETAILS.
                         ==================
               PROJECT# .....   ..............................

                      (If you do modify the DETAILS
                      Please use capitalized letters.)
               DETAILS : ..............................

                      ..............................

                      ..............................

                      ..............................        EFI03-12/86
      Commande=
```

APPENDIX B - SECTION 3.8

```
*** Liste des MENUS pour SGP ***
--------------------------------

            ACCES
            RAPPORT
            ETIQUETTE
            MAJ
            LISTE
```

```
                         *** MENU pour MAJ              ***
                         ---------------------------------

  1- ENTREE d'un nouveau '# de TP'         2- MODIFICATION a un 'TP'
  3- modification du # de 'TP'             4- MODIFICATION DE LA CIE
  5- MODIFICATION DE L'OFFICIER            6- MODIFICATION DU NOM DU GEST.
  7- MODIFICATION DE LA SECTION #TP        8- nouveau TP ' O.O.P. '
  9- nouveau TP ' DRAFT '                 10- EFFACE UN TP 'DRAFT'
 11- MOD.->#TP 'OOP' ET 'DRAFT'           12- nouveau TP ' NOTP '
 13- verifier l'INVENDAIRE d'un TP        14- ENTREE a l'INVENTAIRE d'un TP
 15- MODIF. DU MODAL SUBJ.                16- MODIF.SUR LISTE DES ORIGINAUX
 17- POUR MODIFIER L'EMPLACEMENT          18- CREATION D'UNE SECTION
 19- MAJ D'UNE SECTION                    20- CALCULE NOMBRE PUB ENVOYEES
 21- CALCULE NOMBRE PUB. CREES

Choisissez une fonction->
```

```
                            FICHIER PUBLICATION
                            ===================
NUMERO DE TP   CONTRAT #     DOSSIER     STATUT     DIRECTION     BRANCHE
..........      .....    ............. ..........   .....         .....
TITRE DE LA PUBLICATION                                 ADMINISTRATION
.........................................   .................
......................................... # REF      SECTION
.........................................  ... ..................
PUBLIE PAR (CIE)
......................................................................
NOM DE L'OFFICIER PRENOM      STATUT RPT. TYPE RPT.   REPETITIF   INTERNE
................  ..........  ..........  ..........  ..........  ..........
NOM DU GESTIONAIRE   PRENOM    DATE RPT. DATE RECOM. ACCESSIBLE  SECURITE
................   ..........  ........  ........    ..........  ..........
DISPONIBLE  DATE DISP.  LOCATION             DATE APP. QT.MAXIN. QT.MINIM.
..........  ........  .................... ........    .....       .....
EMPLACEMENT  MATRICE   LIEU MAT.  REIMPRESSION  DATE REIMP.  RECU LE
..........  .......... ..........  ..........    ........     ........
NBS.FINAL  NBS.SOMM.  SOLDE D'INV.  MAILLING    MODAL SUBJ. #REQUISITION
  .....      .....       .....       ..........  .......... TB200-......

REFERENCE # DE TP ->   ..........   ..........   ..........   PF02-11/83

Commande=
```

OPT. 1,2,8,9, 12

```
3
J'execute MOD #TP

                       MODIFICATION A UN # TP
                       ======================

         CE PROGRAMME PERMET DE MODIFIER UN # TP DANS LE FICHIER
         PUBLICATION, LE FICHIER EXTENTION ET LE FICHIER INVENTAIRE

         S.V.P. DONNEZ LE NUMERO DE TP OU TAPEZ "0" ET APPUYEZ SUR
         [CR] POUR RETOURNER AU MENU.

Donnez LE # DE TP ->
```

OPT. 3

```
?
J'execute MOD/SECT.
  # DE TP     # REF          SECTION
 ??????????
                                PF05-02/86
```

OPT. 7

```
10
J'execute EFFAC/DRF

                              EFFACER UN TP "DRAFT"
                              =====================

          CE PROGRAMME PERMET D'EFFACER UN DRAFT DANS LE FICHIER
          PUBLICATION.

# DE TP     CONTR  PNSEQ
==========  =====  =====
DRAFT           0   1645
DRAFT           0   1687

          S.V.P. DONNEZ LE NUMERO "PNSEQ" POUR EFFACER LE DRAFT OU
          TAPEZ "@" ET APPUYEZ SUR [CR] POUR RETOURNER AU MENU.

Donnez PNSEQ      ->
```

OPT. 10

```
11
J'execute MOOPDRFNTP

                    MOD ->#TP "OOP" ET "DRAFT"
                    ==========================

        CE PROGRAMME PERMET DE MODIFIER LE # TP A UN TYPE TEL QUE
        "OOP" OU "DRAFT".

            1 - OOP     2 - DRAFT

        S.V.P. CHOISIR LE NUMERO CORRESPONDANT AU TYPE OU TAPEZ "@"
        ET APPUYEZ SUR [CR] POUR RETOURNER AU MENU.
Donnez # TYPE     ->
```

OPT. 11

```
14
J'exerute ENTREE/INV

          S.V.P. DONNEZ LE NUMERO DE TP OU TAPEZ "@" ET LA
          CLE "RETURN" POUR RETOURNER AU MENU.

Donnez LE # DE TP ->8326E
# DE TP       EMPLACEMNT
8326E        C-1-B
DATE         COMMENTAIRE
87/12/01                            SORTIE   ENTREE   SOLDE
                                         0        0      17
```

OPT. 14

```
J'execute MOD/I43

                             MODIF. DU MODAL SUBJ.
                             =====================

      CE PROGRAMME PERMET DE MODIFIER UN MODAL SUBJECT POUR UN # TP.

      S.V.P. DONNEZ LE NUMERO DE TP OU TAPEZ "0" ET APPUYEZ SUR
      [CR] POUR RETOURNER AU MENU.

Donnez LE # DE TP ->8326E

      0 - AIR         1 - HIGHWAY  2 - MARINE    3 - MULTIMOD
      4 - OFFD/PIP    5 - RAIL     6 - TLVTECH   7 - URBAN
      8 - HANDICAP    9 - PROG-SUP

      S.V.P. CHOISIR UN NUMERO CORRESPONDANT AU MODAL SUBJECT
      OU TAPEZ "0" ET APPUYEZ SUR [CR] POUR RETOURNER AU MENU.

Donnez # MODAL SUBJECT -> URBAN
```

OPT. 15

```
J'execute MOD MAT

                    MODIF.SUR LISTE DES ORIGINAUX
                    *****************************

          CE PROGRAMME PERMET DE MODIFIER LA MATRICE ET LE LIEU DE LA
          MATRICE POUR UN NUMERO DE TP.

          S.V.P. DONNEZ LE NUMERO DE TP OU TAPEZ "0" ET APPUYEZ SUR
          [CR] POUR RETOURNER AU MENU.

Donnez LE # DE TP ->8326E
```

OPT. 16

```
    Inf#      Nom
    ***************************
    31 * MATRICE          (C)  => 10 Car.
     *         *          *
     *         *          *              0-INDEF.     1-INEXIST    2-IMPRIM.
                                         3-RECU

SSM Inc. (Source: PUBLCT'N        , 87/12/01)


         # TP 8328E      VOULEZ-VOUS MODIFIER LA MATRICE ?
         SI OUI, DONNEZ LE NUMERO CORRESPONDANT A LA MATRICE
         SI NON, APPUYEZ SUR [CR] POUR CONTINUER LA PROCEDURE
                 OU TAPEZ "8" ET APPUYEZ SUR [CR] POUR TERMINER
                 LA SESSION ET RETOURNER AU MENU.

         Donnez # MATRICE -> RECU
```

OPT. 16

```
J'execute MOD EMPLAC
Donnez LE # DE TP ->8326E
          TP # ->8326E      EMPLACEMENT ->C-1-B
```

OPT. 17

```
J'execute INSERE/SEC

                       CREATION D'UNE SECTION
                       **********************

          CE PROGRAMME PERMET DE CREER UNE NOUVELLE SECTION.

          S.V.P. DONNEZ LE NOM DE LA NOUVELLE SECTION OU TAPEZ
          "@" ET APPUYEZ SUR [CR] POUR RETOURNER AU MENU.

SECTION         * ____________________
```

OPT. 18

```
J'execute MAJ/SECTION
                              MAJ D'UNE SECTION
                              *****************

         CE PROGRAMME PERMET DE MODIFIER LE NOM D'UNE SECTION DANS LE
         FICHIER SECTION.

         S.V.P. CHOISIR LE "NUMERO DE SEQUENCE" CORRESPONDANT
         A LA SECTION QUE VOUS DESIREZ MODIFIER OU TAPEZ "0" ET
         APPUYEZ SUR [CR] POUR RETOURNER AU MENU.

No. de Seq  SECTION
**********  ********************
         2  TECH. AVANCEE
         3  RECHERCHE&PROG.SPEC.
         8  DPD
         8  DRPD
        10  DRSS
        11  DRSS
        13  ETUDE DE SYSTEMES
        16  TDA
        17  TDC
        21  TECH. APPLICATIONS
        24  TECHNOLOGIE ACTUELLE
        29  TRANSP.SYSTEMS.DIV
```

OPT. 19

```
J'execute CALPUB/ENV


                    CALCULE NOMBRE PUB. ENVOYEES
                    ****************************

          CE PROGRAMME CALCULE LE NOMBRE DE PUBLICATIONS ENVOYEES ENTRE
          DEUX DATES QUE VOUS DETERMINEZ.

          N.B. VOUS DEVEZ INSCRIRE LA DATE DANS CE FORMAT ANNEE/MOIS/JOURS
               EX : 86/01/31
               CE CALCULE PRENDS A PEU PRES 10 MINUTES.

          S.V.P. DONNEZ LES DATES OU TAPEZ "0" ET APPUYEZ SUR [CR] POUR
          RETOURNER AU MENU.

          A PARTIR DU AA/MM/JJ AU AA/MM/JJ INCLUSIVEMENT
```

OPT. 20

```
J'execute CAL/PUBCREE


                    CALCULE NOMBRE PUB. CREES
                    *************************

          CE PROGRAMME CALCULE LE NOMBRE DE PUBLICATION CREES ENTRE
          DEUX DATES QUE VOUS DETERMINEZ.

          N.B. VOUS DEVEZ INSCRIRE LA DATE DANS CE FORMAT ANNEE/MOIS/JOURS
               EX: 86/01/31

          S.V.P. DONNEZ LES DATES OU TAPEZ "0" ET APPUYEZ SUR [CR] POUR
          RETOURNER AU MENU.

          A PARTIR DU AA/MM/JJ AU AA/MM/JJ INCLUSIVEMENT
```

OPT. 20

APPENDIX B - SECTION 3.9

```
                       *** MENU pour ETIQUETTE        ***
                       ----------------------------------

  1- CREATION D'UNE ETIQUETTE             2- MODIFICATION D'UNE ETIQUETTE
  3- EFFACER UNE ETIQUETTE                4- IMPRIMER DES ETIQUETTES
  5- LISTE DES ETIQUETTES

Choisissez une fonction->
```

#1

```
.-------------------------------------------------------.
!        ETIQUETTE           # ACCES     113            !
!        =========                                      !
! APPELLATION     PRENOM             NOM                !
!                                                       !
!              NOM DE COMPAGNIE                         !
!    CENTRE D'EDITION DU GVT DU CANADA                  !
!                 ADRESSE                               !
!    DIVISION DES OPERATIONS COMMERCIALES               !
!    45 BOUL SACRE-COEUR CHAMBRE                        !
!    B-1001                                             !
!    VILLE/PROVINCE             CD PSTL   QUANTITE      !
!    HULL QUEBEC                K1A-0S9       100       !
!-------------------------------------------------------!
                                             ET01 05/87
```

APPENDIX B - SECTION 3.10

```
                       *** MENU pour PCP              ***
                       ----------------------------------

  1- CONTROLE D'UN RAPPORT               2- RECULER D'UNE ETAPE
  3- LIE LE # PROJET AU # DE TP          4- GESTION DU 'PROJ. COMP. PHASE'
  5- CORRECTION A UNE FICHE              6- L'ARCHIVAGE D'UN RAPPORT
  7- CHERCHE un # PROJ. via le P.O.

Choisissez une fonction->
```

```
PR'  CT # 6234        STAGES   ->   AS OF

                     RECEIVED
                     ACKNOWLEDGED
                     REVIEW
                     REV. DRAFT
                     REC.PRINTED
                     CLOSE-OUT
                     DISTRIBUTION
DF03-03/87


        ** MESSAGE IMPORTANT CE NUMERO DE PROJET EST INVALIDE! **

          S.V.P. TAPEZ  'RETURN'  POUR CONTINUER, OU  '@'  POUR

          TERMINER ET RETOURNER AU MENU @

->
```

```
                         *** MENU pour PCP              ***
                         ----------------------------------

   1- CONTROLE D'UN RAPPORT               2- RECULER D'UNE ETAPE
   3- LIE LE # PROJET AU # DE TP          4- GESTION DU 'PROJ. COMP. PHASE'
   5- CORRECTION A UNE FICHE              6- L'ARCHIVAGE D'UN RAPPORT
   7- CHERCHE un # PROJ. via le P.O.

Choisissez une fonction->2
J'execute BACK/STAGE
Donnez PROJET #    ->6777
               NOTE: LE RAPPORT DU PROJET NUMERO 6777 TP# __________
                     ---------------------------------------------------
                     ---------------------------------------------------
                     ---------------------------------------------------
                     EST MAINTENANT A L'ETAPE 'NOTRECEV  '

->
```

OPT. 2

```
                         PROJECT COMPLETION PHASE
 PROJECT #  REQUISITION     FILE #     RSPB. CNTR. DIVISION
 .....      .......... D............  ......  ..............................
 P.O.NAME    PROJECT TITLE                      FINAL RPT.LANG.      CONTACT
 ........... ............................         ..........      ..............
 ORGANIZATION                     HOLDBACK      MODE    TRANSLATION RSPB.
 ............................  ..........  ..........     ..........
 FINAL F  FINAL E  FINAL B  SUM. F  SUM. E  SUM. B  INTER.F  INTER.E  INTER.B
 .....    .....    .....    .....   .....   .....   .....    .....    .....

 DELIVERABLES : ..........  ..........  ..........  ..........  ..........
                ..........  ..........
 IS THERE ANY OTHER SPECIAL MATERIAL: ..........
 TDC IS RESPONSIBLE FOR : ..........  ..........  ..........  ..........
                          ..........  ..........  ..........
 ..............................................................................
 RECEIVED : FINAL F  FINAL E  FINAL B  SUM. F  SUM. E  SUM. B     RDF
            .....    .....    .....    .....   .....   .....    ........
 PAGES/FINAL  PAGES/SUM.  PAGES/INTER.  SUMMARY   P.O. DETAILS  DRAFT RPT.
   .....        .....       .....       ........   ........     ..........
                                                              DF02-04/87

 Commande=
```

APPENDIX B - SECTION 4.1

```
                    *** MENU pour MAJ                ***
                    ----------------------------------

  1- initialisation du MOIS              2- entrees au GRAND LIVRE
  3- CORRECTION au FONDS ETRANGES        4- TOTALISER LES CHARGE FINANCIER
  5- MODIFICATION a un BUDGET            6- MODIFICATION DU KILOMETRAGE
  7- ENTREE LES BUDGETS/L'ANNEE          8- MODIFIER LE NOM DE L'ART.ORG
  9- MODIFICATION a une TRANSACTION     10- CREATION BUDGET ET ART.ORG.
 11- entree de la CHARGE FINANCIERE     12- EXTENSION des BUDGETS/MOIS, -:F
 13- VERIFICATION DES TRANSACTIONS      14- voir les charges financieres
 15- voir une TRANSACTION               16- VOIR un BUDGET

Choisissez une fonction ->
```

OPi 5 # 10
2 # 16

```
|PF1|FepMonter | |Descentre |PgUp|Prcdente |PgDn|Suivante |ESC|SORTIR

 CNTR RESPONSABILITE 257100           BUDGET TOTAL    114,000.00

    # ARTICLE ORGANIQUE        BUDGET/CUM     DEP/CUM       BALANCE
        0100                    64,231.00     49,577.88     14,653.12

                               BUDGETS
 AVRIL         MAI          JUIN          JUILLET       AOUT         SEPTEMBRE
        0.00          0.00   35,307.00     7,231.00      7,231.00     7,231.00
 OCTOBRE       NOVEMBRE     DECEMBRE      JANVIER       FEVRIER      MARS
    7,231.00     10,845.00    7,231.00      7,231.00      7,231.00    17,231.00

                                SOLDES
 AVRIL         MAI          JUIN          JUILLET       AOUT         SEPTEMBRE
   19,826.37    13.217.58    13.217.58     13.217.58      6.624.63    13.217.58
 OCTOBRE       NOVEMBRE     DECEMBRE      JANVIER       FEVRIER      MARS
  -29,743.44         0.00        0.00          0.00          0.00         0.00
Donnez # DU MOIS -> *5                                           BF02 07/87
```

OPT 8

TITRE DE L'ARTICLE ORGANIQUE

N ART.ORG TITRE EN FRANCAIS

TITRE EN ANGLAIS

NºC2 [illegible]

OPT.8

CST. 2 & 93
& 3 d 45

```
                                         ┌─────┐Page        ┌─────┐Page       ┌──┐
|PF1|FenMonter|  |Descentre |PgUp|Prc      dente |PgDn|Suivante |ESC|SORTIR
 └──┘          └┘            └┘           └─────┘              └─────┘          └──┘
 ╔═══════════════════════════════════════════════════════════════════════════════╗
 ║                        ENTREE D'UNE TRANSACTION                                ║
 ║                        ════════════════════════                                ║
 ║   A.P.V. #         BENEFICIAIRE          CENTRE #       ACTIVITE   CONTRAT #   ║
 ║    50913           HOWARD POSLUNS          257120          4100          0     ║
 ║   CHARGE #            ARTICLE         MONTANT          BATCH #       O.K.?     ║
 ║     1020               0802                55.25         12         O.K        ║
 ╚═══════════════════════════════════════════════════════════════════════════════╝
                                                                        TF02 07/87

     DONNEZ KILOMETRAGE ? ->        0
```

```
 ┌──┐          ┌┐            ┌┐           ┌─────┐Page        ┌─────┐Page       ┌──┐
```

APPENDIX B - SECTION 4.2

```
                    *** MENU pour FAYROLL          ***
                    -----------------------------------

   1- AJOUT D'UN EMPLOYE AU FICHIER        2- EFFACER UN RECORD DU FICHIER
   3- initialisation du MOIS               4- MISE A JOUR DES FICHIERS.
   5- CORRECTION DES DONNEES               6- RECUP. D'ENTREE DES DONNEES
   7- ENTREE DES DONNEES                   8- LISTE DE PAYE DU TDC

Choisissez une fonction ->
```

OPT 1
2
5
6
7

```
                    ENREGISTREMENT DU FICHIER PAYE
                    ------------------------------

CENTRE DE RESPONSABILITE          : 257100

NOM DE L'EMPLOYE                  : GRAVEL M

TYPE D'EMPLOI (ART-ORG)           : 0104          SALAIRE BRUT :        0.00

PRIME DE BILINGUISME (ART-ORG)    : 0165          MONTANT DU   :       30.67

SUPPLEMENTAIRE (ART-ORG)          : 0201          MONTANT SUPP :        0.00

AJOUT SI NECESSAIRE (ART-ORG)     :               MONTANT DU   :        0.00

AJOUT SI NECESSAIRE (ART-ORG)     :               MONTANT DU   :        0.00

NUMERO DE CHARGE                  :  1010

      LES DONNEES SONT ELLES EXACTES ? (OUI/NON) : OUI

                                                   03/86 PF01
```

APPENDIX B - SECTION 4.3

```
                    *** MENU pour ANTOINE            ***
                    ------------------------------------

 1- initialisation du MOIS              2- MODIFIER PREVISION DES DEPENSE
 3- RAPPORT DE PERFORMANCE BGT.         4- RPT DES CHARGES FINANCIERES
 5- RAPPORT DE VARIANCE                 6- RAPPORT DE VARIANCE FINAL
 7- MODIFIER L'ENGAGEMENT

hoisissez une fonction ->
```

OPT. 7
(#2)

```
                               ┌───┐Page     ┌───┐Page  ┌──┐
|PF1|Fe|Monter| |Descentre |PgUp|Prc
                               dente |PgDn|Suivante |ESC|SORTIR
 └─┘       └┘      └┘          └───┘         └───┘      └──┘
# ARTICLE :  1100
ENGAGEMENT :         0.00

 POUR SORTIR : PESEZ SUR LA CLEF "SHIFT" ET TAPEZ "@"
               APRES PESEZ SUR LA CL "RETURN"

# ARTICLE :  0100
ENGAGEMENT : 1,250,835.18

 POUR SORTIR : PESEZ SUR LA CLEF "SHIFT" ET TAPEZ "@"
               APRES PESEZ SUR LA CL "RETURN"

# ARTICLE :  @
ENGAGEMENT :

 POUR SORTIR : PESEZ SUR LA CLEF "SHIFT" ET TAPEZ "@"
               APRES PESEZ SUR LA CL "RETURN"
->
```

OPT. 2 #7

APPENDIX B - SECTION 4.4

```
                   *** MENU pour CONFEREN        ***
                   ---------------------------------

  1- initialisation du MOIS             2- CONFERENCE
  3- CORRECTION au MONTANT/conferen     4- "DIRECT" CONFERENCE
  5- VOIR CONF./BAL. A L'IMPRIMANTE     6- MODIFIER les CONFERENCES
  7- "PRECONFERENCE"                    8- RAPPORT MENSUEL de CONFERENCE

Choisissez une fonction ->
```

cf 2, 3, 4, 5

6

```
----------------------------------------------------
|                                                  |
|               CONFERENCE                         |
|                                                  |
|           TITRE DE LA CONFERENCE                 |
|       TESTING                                    |
|                                                  |
|                                                  |
|        ENDROIT          NOM DE L EMPLOYE         |
|    MTL                  GRAVEL                   |
|                                                  |
|    A.P.V      DATE CONF.       MONTANT           |
|    50913                            0.00         |
|                                                  |
|    INSCRIPTION                 VOYAGE            |
|           0.00                          0.00     |
|                                                  |
----------------------------------------------------
                                          KT01-05
```

APPENDIX B - SECTION 5

```
                    *** MENU pour MAJ              ***
                    -----------------------------------

   1- Pour referer aux donnees 84/85       2- Pour referer aux donnees 85/86
   3- Pour referer aux donnees 86/87       4- pour referer aux donneeS 83/84
   5- pour referer aux donnees 87/88       6- Pour entrer un nouveau record
   7- Pour modifier un record              8- Pour voir un record
   9- Pour EFFACER un record              10- Met a ZERO un record
  11- LISTE DES DOSSIERS ALPHABETIQU

 Choisissez une fonction->
```

#6-1-

```
---------------------------------------------------------------------------
|                        DESCRIPTION D'UN RECORD                          |
|-------------------------------------------------------------------------|
|  NUMERO      # DU POSTE      GROUPE-NIVEAU              NOM             |
|    ...       ..........          .....         .....................    |
|-------------------------------------------------------------------------|
|        TYPE                STATUT            RESSOURCE         CENTRE    |
|     ..........           ..........       ...............   ..........   |
|-------------------------------------------------------------------------|
|                       DISTRIBUTION DES MOIS-PERSONNE                     |
|     AVRIL        MAI        JUIN      JUILLET      AOUT      SEPTEMBRE   |
|    .......     .......    .......    .......     .......     .......     |
|                                                                          |
|    OCTOBRE    NOVEMBRE    DECEMBRE   JANVIER     FEVRIER      MARS       |
|    .......     .......    .......    .......     .......     .......     |
|-------------------------------------------------------------------------|
|          REMARQUE : ................................................     |
|-------------------------------------------------------------------------|
                                                            RF01-05/83
```

APPENDIX B - SECTION 6.1

```
                              MENU PRINCIPAL
    1. MLS

    2. SAB/LAS

    3. AV_COLLECTION

    4. SCS






Use space bar, arrow keys, or type number to make selection.
Enter 'b' to return to previous menu or exit.
Enter carriage return to execute selection:  1
```

```
                                        MLS
   1. MENU MLS POUR LISTES

   2. MENU MLS POUR ETIQUETTES CANADIENNES

   3. MENU MLS POUR ETIQUETTES ETRANGERES








Use space bar, arrow keys, or type number to make selection.
Enter 'b' to return to previous menu or exit.
Enter carriage return to execute selection:  1
```

```
                                   MLS

    1. RECHERCHE, ADDITION, MISE A JOUR, RETRAIT
    2. Recherche par 'USAGE', trie par COMPANY
    3. Recherche par 'USAGE', trie par POST_CODE
    4. liste tous les records, trie par LAST_NAME
    5. liste tous les records, trie par COMPANY
    6. liste tous les records, trie par POST_CODE
    7.
    8. imprimer une liste pour 1 ou + 'USAGE' et 1 'MODAL_INT'
    9. liste tous les records pour 1 'USAGE' et 1 'TRANS_TYPE'
   10.
   11. liste pour 'USAGE' & 'PROVINCE', en ordre de compagnie



Use space bar, arrow keys, or type number to make selection.
Enter 'b' to return to previous menu or exit.
Enter carriage return to execute selection:  1
```

```
Query Next Previous Add Update Remove File Screen Current Master Detail
     Output Bye                                          ** 1: mlsxl file**

ID_NUMBER [0    ]           LAST_UPDAT [00/00/00]
GENDER    FIRST_NAME        LAST_NAME
[      ]  [               ] [                        ]  INITIAL
TITLE     [                                     ]       [         ]

COMPANY   [                                     ]
          [                                     ]
          [                                     ]
ADDRESS_1 [                                     ]
ADDRESS_2 [                                     ]
CITY      [                        ]  PROVINCE  [                ]
COUNTRY   [                   ]       POST_CODE [        ]

AREA_CODE PHONE       TRANS_TYPE  MODAL_INT   RES_ACT              ORG_TYPE
  [   ]   [         ] [      ]    [         ] [               ]    [      ]

USAGE [             ]    COPIES_FRE [0 ]  COPIES_ENG [0 ]  LANG_PRE [ ]
NOTES [                                                              ]
      [             ]                                                ]
```

6.1

APPENDIX B - SECTION 6.2

```
                         SAB/LAS
   1. RECHERCHER, AJOUTER, METTRE A JOUR, ENLEVER UN RECORD

   2. IMPRESSION D'UN BON DE COMMANDE

   3. IMPRESSION DE PLUSIEURS BONS DE COMMANDE

   4. GENERATION DES LETTRES DE RECLAMATION

   5. CHANGEMENT DE STATUT - ECRAN SIMPLIFIE




Use space bar, arrow keys, or type number to make selection.
Enter 'b' to return to previous menu or exit.
Enter carriage return to execute selection:  1
```

```
Query Next Previous Add Update Remove File Screen Current Master Detail
     Output Bye                                        ** 1: lpcbasel file**
*-------------------------------------------------------------------------------*

 AUTEUR                      CO-AUTEUR
                                                           ACHAT   DATE
[                          ] [                           ] [00000] [00/00/00]
 CORPORATION/CONFERENCE
[                                                                          ]
 TITRE
[                                                                ]
[                                                                ]
 EDITION                NO REF.                VOLUMES    COPIES     LIVRE/ABON.
[                     ] [                    ] [0    ]    [0    ]    [         ]
 EDITEUR                                                     MODE DE PAIEMENT
[                                                          ] [         ]
 ADRESSE                            COUT ESTIME     DEVISE     DATE RENOUV.
[                              ]   [$0.00      ]   [        ]  [00/00/00]
[                              ]
[                              ]  CODE POSTAL/ZIP
[                              ]  [          ]

*-------------------------------------------------------------------------------*
```

6.2.1

```
Query Next Previous Add Update Remove File Screen Current Master Detail
     Output Bye
                                                        ** 1: lpcbasel file**
STATUT     DATE RECL.  PRIX           DATE RECU  NO DE FACTURE              DATE PAYE
[   ]      [00/00/00] [$0.00       ] [00/00/00] [                        ] [00/00/00
DEMANDEUR(S)
[           ],[           ],[          ]
CORRESPONDANCE: [ ]
NOTE
[
                                                                        ]
dum1 [0     ]     dum2 [0     ]
```

6.2.2

APPENDIX C - SECTION 1

MIS FILES AND FIELDS

JANUARY 12, 198[illegible]

SECTION #
****

INDEX
*****

1.0 MIS ACCESS
1.1 LOGIN/LOGOUT PROCEDURES
1.2 HOW TO ABORT
1.3 HOW TO MOVE BETWEEN COMMAND=,LIST OF MENUS AND MENU
1.4 SSM/PROCOL ERROR MESSAGES
1.5 IMPORTANT TRAITS ABOUT SSM/PROCOL

2.0 IDENTIFICATION OF MIS FILES AND THEIR LINKS

3.0 LIST OF INFORMATION ELEMENTS IN EACH MIS FILE

4.0 COMPLETE DESCRIPTION OF EACH INFORMATION ELEMENT IN EACH MIS FILE (INFORMATION ELEMENT PROFILE/IEP)

IEP'S COMPLETED TO DATE

4.1 CONTRACT (CON) FILE
4.2 PROPOSAL (BFI) FILE
4.3 IDENTIFICATION (IDE) FILE
4.4 LIST (LIS) FILE
4.5 OBJECTIVE (HFI) FILE
4.6 CLASSIFICATION (EFI) FILE
4.7 SCOPE (AFI) FILE
4.8 PROJECT OBJECTIVE (MFI) FILE

5.0 SYSTEM MEMOS OUTLINING IMPORTANT MIS INFORMATION

6.0 SCHEDULED PDP 11/44 SHUTDOWNS

MIS LOGIN/LOGOUT PROCEDURES DECEMBER 19,1

HOW TO LOGIN TO MIS

STEP #1 Turn on terminal (ON/OFF switch located at rear of terminal) and wait until cursor is visible

STEP #2 Press [CR] to access the prompt sign >

STEP #3 When the prompt sign appears, type in

LOGIN and press [CR]

STEP #4 The following instructions will appear

ACCOUNT OR NAME ?

Type in your last name and press [CR]

NOTE: If the previous user has not logged off properly, the following message will appear

* HEL--OTHER USER LOGGED ON *

If this message appears type in

LOGOUT AND press [CR] AT THE PROMPT >
and restart at STEP #3

STEP #5 The next instruction will appear

PASSWORD ?

Enter your password and press [CR]

NOTE: If you type in the wrong password this message will appear

LOG--INVALID ACCOUNTS

if this message appears start from STEP #3 again

NOTE: If you do not enter your password within 15 seconds This message will appear

LOG--TIMEOUT ON RESPONSE

if this message appears start from STEP #3 again

STEP #6 When the SSM/PROCOL title block and the following instruction appear

```
APPLICATION--->
```

Type in MIS and press [CR]

NOTE: If you see the following message

```
*FICHIER INEXISTANT !
VEUILLEZ VOUS IDENTIFIER (NO. D'USAGERS, NO. DE PASSE(ou @))-
```

This means that the word identifying the application was incorrectly entered

Enter @ to logout of system

you may now restart your LOGIN procedures at STEP #3

STEP #7 Be patient and wait 10 to 20 seconds until you are in the designated menu (e.g. MENU,USAGERS)

You may now refer to SECTION 1.3 of this manual and find out how to access ,the various menus and their items or SSM/PROCOL's 'COMMAND=' mode to conduct your own programming work.

HOW TO LOGOUT OF MIS

TO EXIT MIS AND LOGOUT OF SYSTEM,FOLLOW THESE PROCEDURES

YOU ARE IN	TO EXIT MIS
COMMAND=	TYPE IN FIN AND PRESS [CR]
MENU	TYPE IN FIN IMMEDIATELY AFTER -> <ARROW> AND PRESS [CR]
LIST OF MENUS	ENTER . TO ACCESS COMMAND= IMMEDIATELY AFTER COMMAND= TYPE IN FIN AND PRESS [CR]
MENU ITEM**	IF THE SYSTEM IS WAITING FOR A RESPONSE YOU MAY TYPE IN @ <AT SIGN> AND PRESS [CR] TO ACCESS -> <ARROW>. IMMEDIATELY AFTER -> <ARROW> TYPE IN FIN AND PRESS [CR] TO EXIT MIS

** This is when you have executed a function within any of the menus, and you wish to logout from within the session while the system is waiting for your response

HOW TO ABORT A LIST ON YOUR SCREEN

Press the 'CTRL' and 'C' keys on your keyboard simultaneously.System will respond with   DCL>

Immediately at the   DCL>   type LOGOUT and press [CR]
System will log you out of the system.To restart you must begin at step #2 of the LOGIN PROCEDURES

If you do not type LOGOUT and simply press [CR],the system will continue with your list.If you do not type LOGOUT and do not press [CR] the system will automatically continue with your list after 30 seconds.

If you are situated in a menu(your cursor is positioned at the arrow) and you wish

TO ACCESS COMMAND =

ENTER THE NUMBER 0 IMMEDIATELY AFTER THE ARROW AT THE END OF THE MENU YOU ARE IN AND PRESS [CR]

TO ACCESS MENU ITEM

ENTER THE NUMBER CORRESPONDING TO THE MENU ITEM OF YOUR CHOICE AND PRESS [CR]

TO ACCESS ANY OTHER MENUS

TO ACCESS THE LIST OF OTHER MENUS,ENTER . IMMEDIATELY AFTER THE ARROW AT THE END OF THE MENU YOU ARE PRESENTLY IN AND PRESS [CR]

A LIST OF OTHER AVAILABLE MENUS WILL APPEAR

TO ACCESS ANYONE OF THESE MENUS,USE THE ARROW KEYS ↑ OR ↓ TO MOVE THE BOX TO THE MENU OF YOUR CHOICE AND PRESS [CR]

IMPORTANT NOTE
KEEP THE FOLLOWING BASIC RULES IN MIND

FROM MENU

IF YOU ENTER . AND PRESS[CR] YOU WILL ACCESS LIST OF MENUS
0 AND PRESS[CR] YOU WILL ACCESS COMMAND =

FROM LIST OF MENUS

IF YOU ENTER . YOU WILL ACCESS COMMAND =

USE ARROW KEYS ↑ OR ↓ AND MOVE TO MENU OF YOUR CHOICE AND PRESS[CR] YOU WILL ACCESS MENU OF YOUR CHOICE

FROM COMMAND =

IF YOU ENTER THE WORD MENU AND PRESS[CR] YOU WILL ACCESS LIST OF MENUS

IF YOU ENTER MENU OF YOUR CHOICE eg.'MENU,RUDBACK AND PRESS[CR] YOU WILL ACCESS MENU RUDBACK

SSN/PROCOL
ERROR MESSAGES

When using the 'COMMAND=' Mode, the following error messages may be encountered

ERROR MESSAGES	SIGNIFICANCE
enregistrement inexistant	The computer cannot find the records you have selected
error de selection	The computer has identified an error in your selections e.g. F,CON,S06=MYERS, I6 contains project numbers not officers' names
manque un selection	Selections have not been entered properly or entered at all in your FETCH or + COMMAND
trop de numero d'information	When a FETCH or + COMMAND contains instructions to list information e.g. F,CON,S04=POSLUNS,I6,7,11 FETCH or + COMMANDS are used only to create sets of records.Information required such as I6,7,11 should be identified in your LIST COMMAND
il n'y a pas de numero d'information	Information elements required have not been identified in the LIST COMMAND. Ensure that the first information element begins with the letter 'I',meaning the following string of numbers identify the information required
fichier inexistant	The three letter file identifier you have used is incorrect.Verify the file name identifiers in the section entitled 'IDENTIFICATION OF FILES'
il manque le nom du fichier	The file from which you are gathering information has not been identified in your command

NOTE: IF YOU ENCOUNTER MESSAGES THAT HAVE NOT BEEN OUTLINED ABOVE,PLEASE REPORT IT IMMEDIATELY TO ONE OF THE PROGRAMMING ANALYSTS

KEY TRAITS
KEEP THE FOLLOWING NOTES IN MIND WHEN USING SSM/PROCOL

1.Question mark "?" appearing at the end of your screen

When executing a list,the software displays the first page and a flashing ? at the bottom left hand corner of your screen.

OPTIONS

- Press [CR] to continue to the next page
- Press / <slash> to continue with the rest of the list
- Press @ to end the list and return to "COMMAND=" mode

2. Flashing square appearing after a command is executed or after responding to a question within any of the menu items

The flashing square means that SSM/PROCOL is computing and will be provide you with some response.
The more complex the program is the more time the software needs to work out the particular problem.

3. What does it mean when SSM/PROCOL dislays an arrow
->

The arrow will always appear after completing a session carried out within any of the menu functions. The arrow indicates that you are back in the menu.

OPTIONS

- Press [CR] to view menu items
- Enter number corresponding to the menu item of your choice and press [CR]
- Type in FIN to logout of the system

IDENTIFICATION OF FILES AND
BRIEF DESCRIPTION

FILE	ABBREVIATION	DESCRIPTION
CONTRACT	CON	MAIN MIS FILE CONTAINING ALL TDC SPONSOR RECORDS
TRANSACTION	TRA	MIS FILE CONTAINING FINANCIAL TRANSACTIONS FOR ALL TDC PROJECTS
NEW ORGANISME	ORG	FILE CONTAINING THE NAME AND LOCATION OF CONTRACTORS
PROJECT	PRO	CONTAINS INFO AT PROJECT AS WELL AS SPONSOR LEVEL
PURPOSE	PUR	FILE CONTAINING PURPOSE TEXTS FOR TDC PROJECTS(APPLICABLE TO < 1985)
PROJECT OBJECTIVE	MFI	FILE CONTAINING PROJECT OBJECTIVE TEXTS FOR TDC PROJECTS
SCOPE	AFI	FILE CONTAINING PROJECT SCOPE TEXTS
REMARQUE	REM	FILE CONTAINING PROJECT OFFICERS' REMARQUES FOR EACH PROJECT
PROPOSALS	BFI	FILE CONTAINING TDC PLANNED PROJECTS
IDENTIFICATION	IDC	CONTAINS TDC PROJECTS CODED BY MEC CODES
LIST	LIS	CONTAINS SPONSOR RECORDS CREATED BY TDC PROGRAM COORDINATORS
OBJECTIVE	HFI	CONTAINS TDC'S OPERATIONAL PLAN (OBJECTIVES/SUBOBJECTIVES)
SCIENCE ADDENDUM	SCI	SCIENCE CLASSIFICATIONS USED IN PRODUCING REPORTS FOR STATISTICS CANADA
MODE CODE	JFI	CONTAINS TDC'S MODAL CATEGORIES
FACTURE	FAC	CONTAINS INVOICES PROCESSED AGAINST TDC CONTRACTS
REQUISITION	QFI	CONTAINS REQUISITIONS SENT TO DSS FOR PROCESSING
DIVISION	DIV	CONTAINS THE NAMES OF TDC'S RESPONSIBILITY CENTERS
TYPE O	TYP	CONTAINS ORGANIZATION CLASSIFICATION TYPE USED TO CODE TDC PROJECTS
EXPLICATION	EXP	CONTAINS DOCUMENTATION/PROCEDURES TEXTS USED IN VARIOUS TDC PROGRAMS
CLASSIFICATION	EFI	CONTAINS PROJECT ORIGIN INFO. MOST FIELDS ARE PRESENTLY AVAILABLE
FINANCE	FIN	CONTAINS VARIOUS INFORMATION USED BY FINANCE
UTL CART	UTL	CONTAINS CARTE MAITRESSE USED ONLY BY FINANCE
TIES	TIE	CONTAINS INFORMATION USED TO TRACK TDC TIES CONTRACTS
COMPLETION PHASE	DFI	CONTAINS INFORMATION USED TO TRACK DRAFT AND FINAL REPORTS
PUBLICATION	PUB	CONTAINS TP#,STATUS,TYPE AND DETAILS OF THE NATURE OF EACH PROJ REPORT
EQUIPMENT	GFI	CONTAINS DETAILS OF ANY EQUIPMENT RELATED TO A PROJECT
EXTENDTP	EXT	CONTAINS INVENTORY INFORMATION FOR EACH TP#
INVENT'R	INV	- CONTAINS INVENTORY INFORMATION FOR EACH TP#

THE FOLLOWING FILES ARE IN THE SYSTEM
BUT ARE NOT BEING USED

TARGET	KFI	FILE ORIGINALLY REQUESTED TO STORE TARGET TEXTS ASSOCIATED WITH TDC'S OPERATIONAL PLAN

NOTE: THE COMPUTER SYSTEM IDENTIFIES EACH MIS FILE BY A THREE LETTER NAME. MIS USERS SHOULD USE THIS NAME TO IDENTIFY THE FILE THEY WISH TO EXTRACT DATA FROM WHEN PROGRAMMING.

E.G. L,CON,[illegible] 1-19,04,T4
L,CON,[illegible] (ORG),04,T1

TO \ PEEKING FROM	CONTRACT	TRANSACTION	NEW ORGANISME	PROJECT	PURPOSE	PROJECT OBJECTIVE	SCOPE	REMARQUE	PROPOSALS	IDENTIFICATION	LIST	OBJECTIVE	SCIENCE ADDENDUM	MODE CODE	FACTURE	REQUISITION	DIVISION	TYPE O	EXPLICATION	CLASSIFICATION	FINANCE	UTL CART	TIES	COMPLETION PHASE	PUBLICATION	EQUIPMENT	EXTENDTP	INVENT'R
CONTRACT	●	●		●				●		●					●	●					●	●	●	●				
TRANSACTION		●																										
NEW ORGANISME	●		●	●											●	●					●	●	●	●				
PROJECT				●																								
PURPOSE	●				●																							
PROJECT OBJECTIVE	●			●		●				●																		
SCOPE	●			●			●			●																		
REMARQUE	●			●				●		●																		
PROPOSALS																												
IDENTIFICATION	●			●						●						●							●	●				
LIST										●	●																	
OBJECTIVE				●						●	●	●																
SCIENCE ADDENDUM	●												●															
MODE CODE				●						●		●		●														
FACTURE															●													
REQUISITION																●												
DIVISION																	●							●				
TYPE O	●														●	●		●			●	●						
EXPLICATION																			●									
CLASSIFICATION	●			●						●										●				●				
FINANCE	●																				●							
UTL CART																						●						
TIES		●																					●	●				
COMPLETION PHASE	●																							●			●	
PUBLICATION																									●			
EQUIPMENT																										●		
EXTENDTP																									●		●	●
INVENT'R																											●	●

```
            Liste des
        Elements d'Information
        du Fichier CONTRAT
      . ------------------------

      Inf#      Nom
      ===========================
 ->    1 = RSPB CNT          (T)  =>  6 Car.
       2 = BRANCH            (C)  => 10 Car.
       .          .           .
       .          .           .            0 UNDEF      1-DGRD      2-TPD
       .          .           .            3-DPM        4-DRPC      5-DRSS
       .          .           .            6-EDTDC      7-NONE      8-TDA
       .          .           .            9-TDT       10-TST      11-11
       .          .           .           12-12        13-13       14-14
       .          .           .           15-15
       3 = DIV.CODE          (L)  =>  5 Car.
 ->    4 = OFF PRJT          (A)  => 11 Car.
       5 = DRS ACT.          (N)  =>  5 Car.
 ->    6 = PROJECT           (N)  =>  5 Car.
 ->    7 = PRJT TTL          (T)  => 30 Car.
 ->    8 = FILE NO           (A)  => 13 Car.
 ->    9 = REQN.#            (A)  => 10 Car.
 ->   10 = STATUS            (C)  => 10 Car.
       .          .           .
       .          .           .            0-UNDEF      1-TERMINAT  2-CMPLETED
       .          .           .            3-CLOSING    4-ACTIVE    5-NEGOTIAT
       .          .           .            6-AMENDMNT   7-PRE-AMEN  8-APP-I-PP
                                           9-9         10-10
      11 = TOT$AUTH          (L)  => 11 Car.
      12 = DIFFRNCE          (L)  => 11 Car.
      13 = EST $ CY          (L)  => 11 Car.
      14 = EST$CY+1          (L)  => 11 Car.
      15 = EST$FY            (L)  => 11 Car.
 ->   16 = no de sequence    (L)  => 10 Car.
 ->   17 = ORG - NSI - REF.  (L)  => 10 Car.
      18 = BGT $ CY          (L)  => 11 Car.
      19 = BGT$CY+1          (L)  => 11 Car.
      20 = BGT$FUT           (L)  => 11 Car.
      21 = AVAIL - 1         (L)  => 11 Car.
      22 = EFI - NSI - ref.  (L)  => 10 Car.
      23 = REQN.DT           (D)  =>  8 Car.
      24 = SIGN DT           (D)  =>  8 Car.
      25 = DATE MOD          (D)  =>  8 Car.
      26 = IDE - NSI - REF.  (L)  => 10 Car.
      27 = MOD SUBJ          (C)  => 10 Car.
       .          .           .
       .          .           .            0-AIR        1-HIGHWAY   2-MARINE
       .          .           .            3-MULTIMOD   4-OFFD/PIP  5-RAIL
       .          .           .            6-TLVTECH    7-URBAN     8-HANDICAP
       .          .           .            9-PROG.SUP  10-UNDEF.   11-11
       .          .           .           12-12        13-13       14-14
                                          15-15
      28 = SPON$ACT          (L)  => 11 Car.
      29 = SCIENCE           (N)  =>  5 Car.
      30 = SCI - NSI - REF   (L)  => 10 Car.
      31 = TYP - NSI - REF.  (L)  => 10 Car.
      32 = REGION            (C)  => 10 Car.
       .          .           .
       .          .           .            0-UNDEF      1 NFLD      2-P.E.I.
       .          .           .            3-NOVA SCO   4-N.BRUNSW  5 QUEBEC
       .          .           .            6 ONTARIO    7 MAN       8 SASK
       .          .           .            9 ALBERTA   10 B.C.     11 YUKON/NW
                                          12 NCR(QUE)  13 NCR(ONT) 14 FOREIGN
```

```
   Inf$      Nom
   ==========================
   33 = RPROJECT            (N)  =>  5 Car.
   34 = LIN OBJT            (N)  =>  5 Car.
   35 = FE CHARG            (N)  =>  5 Car.
   36 = FIN - NSI - Ref.    (L)  => 10 Car.
   37 = HOLDBACK            (L)  => 11 Car.
   38 = TDC SHAR            (N)  =>  5 Car.
   39 = AIP DATE            (D)  =>  8 Car.
   40 = AMEND DT            (D)  =>  8 Car.
   41 = DRAFTDUE            (D)  =>  8 Car.
   42 = FINALDEL            (D)  =>  8 Car.
   43 = ACT$CY-2            (L)  => 11 Car.
   44 = ACT$CY-1            (L)  => 11 Car.
   45 = ACT$/MNT            (L)  => 11 Car. X 14
   46 = ACT $ CY            (L)  => 11 Car.
   47 = BAL $ CY            (L)  => 11 Car.
   48 = PREV YRS            (L)  => 11 Car.
   49 = BAL $TOT            (L)  => 11 Car.
   50 = TOT $ACT            (L)  => 11 Car.
   51 = PEND INV            (L)  => 11 Car.
   52 = UNAPP$CY            (L)  => 11 Car.
   53 = TOT$INCR            (L)  => 11 Car.
   54 = REM - NSI - REF.    (L)  => 10 Car.
   55 = DFI - NSI - REF.    (L)  => 10 Car.
   56 = HLDBKCUM            (L)  => 11 Car.
   57 = %FUNDS U            (N)  =>  5 Car.
   58 = %TIME PL            (N)  =>  5 Car.
   59 = ORIGAUTH            (L)  => 11 Car.
   60 = SUSPENSE            (L)  => 11 Car.
   61 = UNAPP$NY            (L)  => 11 Car.
   62 = WORKAREA            (L)  => 11 Car. X 4
   63 = EST BALY            (L)  => 11 Car.
   64 = TRANS CU            (N)  =>  5 Car.
   65 = INITIATE            (L)  => 11 Car.
   66 = FILE$/PR            (A)  =>  8 Car.
   67 = MANAGED             (L)  => 11 Car.
-> 68 = CSPONSOR            (C)  => 10 Car.
   .        .               .
   .        .               .               0-DEFAULT    1-TDC-O&M    2-MSERD-RF
   .        .               .               3-CMTA-AM    4-COAL-SUPLY 5-ERDA/QUE
   .        .               .               6-DSS        7-TCM        8-TCAP
   .        .               .               9-TCAV      10-TCS       11-ADMPC
   .        .               .              12-CONS      13-TRNS      14-LIQS
   .        .               .              15-15        16-OTHER DEPT17-17
   .        .               .              18-NON PROFIT19-19        20-OTHER TC
   .        .               .              21-IND.OPERAT22-TDPP-E&H  23-CONSULTANT
   .        .               .              24-IND.MFG   25-PROV/MUN  26-26
   .        .               .              27-UNIVERSITY28-FOREIGN   29-TDC-EXT
                                           30-MSERD-EH
   69 = PUR - NSI - REF.    (L)  => 10 Car.
   70 = REM/ALTR            (D)  =>  8 Car.
   71 = MFI - NSI - REF.    (L)  => 10 Car.
   72 = AFI - NSI - REF.    (L)  => 10 Car.

SSM Inc. (Source: CONTRAT          , 87/07/02)
```

```
              Liste des
          Elements d'Information
          du Fichier TRANSACTION
         -------------------------

      Inf#      Nom
      ===========================
       1 - DATE TRN          (D)  =>  8 Car.
  ->   2 = PROJET#           (N)  ->  5 Car.
       3 = MONTH             (C)  => 10 Car.
       .          .           .
       .          .           .               0-INDEF.      1-AVRIL       2-MAI
       .          .           .               3-JUIN        4-JUILLET     5-AOUT
       .          .           .               6-SEPTEMBRE   7-OCTOBRE     8-NOVEMBRE
       .          .           .               9-DECEMBRE   10-JANVIER    11-FEVRIER
                                             12-MARS       13-13 EME     14-14 EME
       4 = AMOUNT            (L)  => 11 Car.
       5 = TO DATE           (L)  -> 11 Car.
       6 = BALANCE           (L)  => 11 Car.
       7 = TYPE TRN          (T)  =>  5 Car.
       8 = TIE - NSI - Ref.  (L)  => 10 Car.
       9 = TRANS #           (N)  =>  5 Car.
      10 = INV/ANN#          (T)  => 10 Car.
      11 = BATCH ID          (T)  ->  5 Car.
      12 = MONTH             (C)  -> 10 Car.
       .          .           .
       .          .           .               0-INDEF.      1-AVRIL       2-MAI
       .          .           .               3-JUIN        4-JUILLET     5-AOUT
       .          .           .               6-SEPTEMBRE   7-OCTOBRE     8-NOVEMBRE
       .          .           .               9-DECEMBRE   10-JANVIER    11-FEVRIER
                                             12-MARS       13-13 EME     14-14 EME
      13 = C-REFER.          (L)  ->  5 Car.
  ->  14 = REF.#             (L)  =>  5 Car.

    SSM Inc. (Source: TRANSACTION     , 86/08/06)
```

```
          Liste des
     Elements d'Information
     du Fichier NEW ORG
     ------------------------

   Inf#      Nom
   ==========================
    1 = ORG.TYPE            (N)  =>  5 Car.
    2 = APPELLAT            (T)  =>  5 Car.
    3 = PRENOM              (T)  => 10 Car.
    4 = NOM                 (T)  => 20 Car.
    5 = TITRE               (T)  => 40 Car.
 >  6 = NOM CIE             (T)  => 30 Car.
    7 = NOM CIE             (T)  => 40 Car.
    8 = ADRESSE1            (T)  => 30 Car.
    9 = ADRESSE2            (T)  => 30 Car.
   10 = VILLE               (T)  => 20 Car.
   11 = CODEPSTL            (T)  =>  7 Car.
   12 = TELEPHON            (T)  => 12 Car.
-> 13 = N/ORG.TY            (C)  => 10 Car.
    .        .               .              0-UNCODED    1-TDC        2-OTHFEDGV
    .        .               .              3-UNI/INS    4-NONPRINS   5-CDNCONSU
    .        .               .              6-CDNMANUF   7-CDNOPERA   8-CDNOTHER
    .        .               .              9-FOREIGN   10-TC-OTHER  11-MUNICIPAL
    .        .               .             12-PROVINCE
-> 14 = REF.#               (L)  =>  5 Car.

SSM Inc. (Source: NEW ORG          , 87/07/02)
```

```
          Liste des
        Elements d'Information
        du Fichier PROJECT FILE
        -----------------------

     Inf#      Nom
     ===========================
      1 = REF.#              (N)  =>  5 Car.
      2 = REC.TYPE           (C)  => 10 Car.
      .          .            .
      .          .            .               C-0            1 1            2-2
                                              3 3            4-4            5-5
      3 = SPONS.OCCUR        (N)  =>  5 Car.
      4 = SPONSOR #          (N)  =>  5 Car. X I3
      5 = SPONSOR CODE       (C)  => 10 Car. X I3
      .          .            .               0-DEFAULT      1-TDC-O&M      2-MSERD-RF
      .          .            .               3 CMTA-AM      4 COAL-SUPLY 5 ERDA/QUE
      .          .            .               6-DSS          7-TCM          8-TCAP
      .          .            .               9-TCAV        10-TCS         11-ADMPC
      .          .            .              12-CONS        13-TRNS        14-LIQS
      .          .            .              15-15          16-OTHER DEPT17-17
      .          .            .              18-NON PROFIT19-19            20-OTHER TC
      .          .            .              21-IND.OPERAT22-TDPP-E&M   23-CONSULTANT
      .          .            .              24-IND.MFG     25-PROV/MUN    26-26
      .          .            .              27-UNIVERSITY28-FOREIGN     29-TDC-EXT
      .          .            .              30-MSERD-EM
      6 = P-TOTAL AUTH.      (F)  => 12 Car.
      7 = P-EST $ CY         (F)  => 12 Car.
      8 = P-EST $ CY+1       (F)  => 12 Car.
      9 = P-EST $ FY         (F)  => 12 Car.
     10 = P-ACT $ CY-2       (F)  => 12 Car.
     11 = P-ACT $ CY-1       (F)  => 12 Car.
     12 = P-ACT $ CY         (F)  => 12 Car.
     13 = P-ACT $/MNT        (F)  => 12 Car.
     14 = P-BAL $ CY         (F)  => 12 Car.
     15 = P-TOT $ ACT        (F)  => 12 Car.
     16 = P-TOT $ INCR       (F)  => 12 Car.
     17 = P-INCR $ CY        (F)  => 12 Car.
     18 = P-PREVIOUS YRS     (F)  => 12 Car.
     19 = P-AVAIL-1          (F)  => 12 Car.
     20 = P-AVAIL-2          (F)  => 12 Car.
     21 = P-AVAIL-3          (F)  => 12 Car.
     22 = P-AVAIL-4          (F)  => 12 Car.
  -> 23 = EFI - NSI - Ref.   (L)  => 10 Car.
     24 = S-EST $ CY         (F)  => 12 Car. X I3
     25 = S-EST $ CY+1       (F)  => 12 Car. X I3
     26 = S-EST $ FY         (F)  => 12 Car. X I3
     27 = S-ACT $ CY-2       (F)  => 12 Car. X I3
     28 = S-ACT $ CY-1       (F)  => 12 Car. X I3
     29 = S-ACT $ CY         (F)  => 12 Car. X I3
     30 = S-ACT $/MNT        (F)  => 12 Car. X I3
     31 = S-BAL $ CY         (F)  => 12 Car. X I3
     32 = S-TOT $ ACT        (F)  => 12 Car. X I3
     33 = S-TOT $ INCR       (F)  => 12 Car. X I3
     34 = S-INCR $ CY        (F)  => 12 Car. X I3
     35 = S-PREVIOUS YRS     (F)  => 12 Car. X I3
     36 = S-TOTAL AUTH.      (F)  => 12 Car. X I3
     37 = S-AVAIL-7          (F)  => 12 Car. X I3
     38 = S-AVAIL-8          (F)  => 12 Car. X I3
```

```
       Inf#       Nom
       ============================
       39 = S-AVAIL-9          (F)  => 12 Car. X I3
       40 = S-AVAIL-10         (F)  => 12 Car. X I3
       41 = AVAIL-11           (C)  => 10 Car.
        .           .           .               0-0
       42 = AVAIL-12           (C)  => 10 Car.
        .           .           .               0-0
       43 = AVAIL-13           (C)  => 10 Car.
        .           .           .               0-0
    -> 44 = OFF PRJT           (A)  => 11 Car.
       45 = AVAIL-15           (A)  => 13 Car.
       46 = AVAIL-16           (A)  => 13 Car.
     > 47 = PRJT TTL           (T)  => 30 Car.
       48 = AVAIL-18           (A)  =>  8 Car.
       49 = REPORTING PHASE    (N)  =>  5 Car.
       50 = AVAIL-20           (N)  =>  5 Car.
       51 = ACTIVE >1YEAR      (N)  =>  5 Car.
       52 = JFI - NSI - Ref.   (L)  => 10 Car.
    -> 53 = CON - NSI - Ref.   (L)  => 10 Car.
       54 = IDE - NSI - Ref.   (L)  => 10 Car.
       55 = HFI - NSI - Ref.   (L)  => 10 Car.
       56 = MFI - NSI - Ref.   (L)  => 10 Car.
       57 = AFI - NSI - Ref.   (L)  => 10 Car.
       58 = REM - NSI - Ref.   (L)  => 10 Car.
       59 = ORG - NSI - Ref.   (L)  => 10 Car.
       60 = BLANKS             (A)  =>  8 Car.
       61 = AVAIL-24           (D)  =>  8 Car.
       62 = AVAIL-25           (D)  =>  8 Car.
       63 = LAST UPDATE        (D)  =>  8 Car.
       64 = No de SEQUENCE .   (L)  => 10 Car.

    SOM Inc. (Source: PROJECT FILE     , 87/07/02)
```

```
          Liste des
      Elements d'Information
      du Fichier PURPOSE
     -------------------------

   Inf#      Nom
   ============================
->  1 = PINDEX            (N)  =>  5 Car.
    2 = PURPOSE           (T)  => 70 Car. X 3
    3 = DATE/ALT          (D)  =>  8 Car.
->  4 = REFER #           (L)  =>  5 Car.

SSM Inc. (Source! PURPOSE          , 85/08/12)
```

```
          Liste des
      Elements d'Information
      du Fichier PROJ.OBJ
     -----------------------

    Inf#     Nom
    ==========================
->   1 = OINDEX          (N)  =>  5 Car.
     2 = PROJ.OBJ        (T)  => 70 Car. X 9
     3 = DATE/ALT        (D)  =>  8 Car.
->   4 = MREFER #        (L)  =>  5 Car.

SSM Inc. (Source: PROJ.OBJ          , 85/08/12)
```

```
          Liste des
        Elements d'Information
        du Fichier SCOPE
       ------------------------

     Inf#      Nom
     ===========================
 ->   1 = AINDEX             (N)  =>  5 Car.
      2 = SCOPE              (T)  => 70 Car. X 11
      3 = AV-1               (N)  =>  5 Car.
      4 = AV-2               (N)  =>  5 Car.
      5 = AV-3               (D)  =>  8 Car.
      6 = AV-4               (L)  => 10 Car.
      7 = AV-5               (L)  => 10 Car.
      8 = AV-6               (A)  => 70 Car.
      9 = DATE/ALT           (D)  =>  8 Car.
 ->  10 = AREFER #           (L)  =>  5 Car.

 SSM Inc. (Source! SCOPE            , 85/08/12)
```

```
           Liste des
         Elements d'Information
         du Fichier PROPOSAL
         ---------------------------------

       Inf#      Nom
       ============================
  ->    1 = REF. #               (N)  =>  5 Car.
  ->    2 = PO NAME              (A)  => 11 Car.
        3 = CHIEF'S              (A)  => 11 Car.
        4 = PRFORMER             (A)  => 20 Car.
        5 = DATE/PLA             (A)  =>  6 Car.
        6 = EST$COST             (L)  =>  9 Car.
        7 = LAST/MOD             (D)  =>  8 Car.
        8 = CREATION             (D)  =>  8 Car.
        9 = DESCT'N              (T)  => 50 Car. X 6
       10 = COMMENTS             (T)  => 30 Car. X 7
       11 = OLD MODE             (C)  => 10 Car.
        .           .             .              0-AIR        1-HIGHWAY    2-MARINE
        .           .             .              3-MULTIMOD   4-OFFD/PIP   5-RAIL
        .           .             .              6-TLVTECH    7-URBAN      8-HANDICAP
        .           .             .              9-PROG.SUP  10-UNDEF.
  ->   12 = MODE ORD             (C)  => 10 Car.
        .           .             .              0-UNDEF.     1-RAIL       2-RAIL
        .           .             .              3-MARINE     4-AIR        5-HIGHWAY
        .           .             .              6-URBAN      7-OFFD/PIP   8-MULTIMOD
        .           .             .              9-TLVTECH   10-HANDICAP  11-PROG.SUP
  ->   13 = MODE ID              (C)  => 10 Car.
        .           .             .              0-UNCODED    1-R          2-P
        .           .             .              3-M          4-A          5-H
        .           .             .              6-U          7-O          8-I
        .           .             .              9-T         10-E         11-S
       14 = DATE/PLA             (A)  =>  6 Car. X 3
  ->   15 = RSPB #               (A)  =>  6 Car.
       16 = AV-N                 (N)  =>  5 Car.
       17 = AV-D                 (D)  =>  8 Car.
       18 = AV-D                 (D)  =>  8 Car.
       19 = AV-F                 (L)  => 10 Car.
       20 = AV-F                 (L)  => 10 Car.
       21 = AV-F                 (L)  => 10 Car.
       22 = AV-F                 (L)  => 10 Car.
  ->   23 = MODE #               (N)  =>  4 Car.
       24 = DIV.CODE             (L)  => 10 Car.
       25 = AV-N                 (N)  =>  5 Car.
       26 = AV-N                 (N)  =>  5 Car.
       27 = AV-N                 (N)  =>  5 Car.
       28 = O-REFER.             (L)  => 10 Car.
       29 = J-REFER.             (L)  =>  5 Car.
  ->   30 = no de sequence       (L)  =>  5 Car.

 CSM Inc. (Source: PROPOSAL          , 87/07/02)
```

```
           Liste des
        Elements d'Information
        du Fichier IDENT.
        ..............................

     Inf#      Nom
     ============================
  >   1 = PROJECT          (N)  =>  5 Car.
  >   2 = M.E.CAT          (A)  =>  4 Car.
  >   3 = M.E.CAT          (A)  =>  1 Car.
  >   4 = M.E.CAT          (A)  =>  2 Car.
      5 = ME-PART3         (A)  =>  2 Car.
      6 = FY$PLAN          (L)  => 11 Car.
      7 = DSS-FLAG         (C)  => 10 Car.
      .            .        .
      .            .        .           0-UNDEF.      1-FLAG-ON     2-FLAG-OFF
      .            .        .           3-OBJ-3       4-OBJ-4       5-OBJ-5
      .            .        .           6-OBJ-6       7-OBJ-7       8-OBJ-8
      .            .        .           9-OBJ-9      10-OBJ-10     11-OBJ-11
      .            .        .          12-OBJ-12     13-OBJ-13     14-OBJ-14
                                       15-OBJ-15
      8 = M-REFER.         (L)  => 10 Car.
      9 = MODE ORD         (C)  => 10 Car.
      .            .        .
      .            .        .           0-UNDEF.      1-RAIL        2-MARINE
      .            .        .           3-AIR         4-HIGHWAY     5-URBAN
      .            .        .           6-OFFD/PIP    7-MULTIMOD    8-TLVTECH
                                        9-HANDICAP   10-PROG.SUP
     10 = AIP WEEK         (N)  =>  5 Car. X 2
     11 = NEG WEEK         (N)  =>  5 Car. X 2
  -> 12 = SPONS #          (A)  =>  6 Car.
     13 = P.O. ID          (A)  =>  4 Car.
     14 = AMEND WK         (N)  =>  5 Car. X 2
     15 = A-REFER.         (L)  => 10 Car.
     16 = CNTLDATE         (C)  => 10 Car.
      .            .        .
                                        0-NOTRECEV    1-DRAFT       2-FINAL
     17 = AUTH$GRP         (C)  => 10 Car.
      .            .        .
      .            .        .           0-N/A         1-0-15        2-15-30
      .            .        .           3-30-50       4-50-100      5-100-250
                                        6-250-1K      7-1K & +
     18 = INCR$ CY         (L)  => 11 Car.
     19 = NY$PLAN          (L)  => 11 Car.
     20 = R-REFER.         (L)  => 10 Car.
     21 = AMND/APP         (D)  =>  8 Car.
     22 = SPONSOR          (A)  =>  6 Car.
     23 = AVAIL-L          (L)  => 10 Car.
     24 = TITRE            (T)  => 20 Car.
  -> 25 = J-REFER.         (L)  => 10 Car.
  -> 26 = H-REFER.         (L)  => 10 Car.
     27 = CY$PLAN          (L)  => 11 Car.
     28 = DSS OFF.         (C)  => 10 Car.
      .            .        .
      .            .        .          0-UNASSIGNED 1-DSS-MTL     2-DSS-OTT
      .            .        .          3-DSS-VANC   4-DSS-HFX     5-DSS-WPG
      .            .        .          6-DSS-NFLD   7-DSS-TOR     8-DSS-EDMT
      .            .        .          9 9         10-10         11-11
                                      12 12        13-DSS
     29 = EFI - NSI - ref. (L)  => 10 Car.
  -> 30 = C-REFER.         (L)  => 10 Car.
     31 = L-REFER.         (L)  => 10 Car.
  -> 32 = REF #            (L)  =>  5 Car.

CCM Inc. (Source: IDENT.          , 07/07/92)
```

```
          Liste des
      Elements d'Information
      du Fichier TARGET
      ------------------------

   Inf#      Nom
   ==========================
->  1 = MEC #               (A)   =>  4 Car.
    2 = TARGET              (T)   => 70 Car. X 4
    3 = BUT                 (T)   => 70 Car. X 4
    4 = STR.TRGT            (T)   => 70 Car. X 4
    5 = BUT STR             (T)   => 70 Car. X 4
    6 = AV-A                (A)   =>  4 Car.
    7 = AV-A                (A)   =>  4 Car.
    8 = AV-N                (N)   =>  5 Car.
    9 = AV-N                (N)   =>  5 Car.
   10 = AV-N                (N)   =>  5 Car.
   11 = AV-N                (N)   =>  5 Car.
   12 = HFI - KSI - REF.    (L)   =>  5 Car.
   13 = KNSEQNC.            (L)   =>  5 Car.

SSM Inc. (Source: TARGET          , 85/08/12)
```

```
          Liste des
        Elements d'Information
        du Fichier LIST
        ..............................

     Inf#      Nom
     ==============================
->   1 = ME. CODE           (A)  =>  4 Car.
     2 = SPONS.ID           (T)  => 30 Car. X 2
     3 = AV-F               (L)  => 11 Car.
     4 = 84-85 $ PLAN       (L)  => 11 Car.
->   5 = SPON #             (A)  =>  6 Car.
     6 = 85-86 $ PLAN       (L)  => 11 Car.
     7 = 86-87 $ PLAN       (L)  => 11 Car.
     8 = COM.CERT           (L)  => 11 Car.
     9 = 87-88 $ PLAN       (L)  => 11 Car.
    10 = 88-89 $ PLAN       (L)  => 11 Car.
    11 = $R087-88           (L)  => 11 Car.
    12 = $R088-89           (L)  => 11 Car.
    13 = 89-90 $ PLAN       (L)  => 11 Car.
    14 = 90-91 $ PLAN       (L)  => 11 Car.
    15 = HFI - NSI - REF.   (L)  =>  5 Car.
    16 = AV-N               (N)  =>  5 Car.
    17 = AV-N               (N)  =>  5 Car.
    18 = AV-N               (N)  =>  5 Car.
    19 = AV-A               (A)  => 12 Car.
->  20 = SPON COD           (A)  =>  1 Car.
    21 = SPON COD           (A)  =>  2 Car.
    22 = AV-D               (D)  =>  8 Car.
    23 = AV-D               (D)  =>  8 Car.
    24 = AV-N               (N)  =>  5 Car.
    25 = AV-N               (N)  =>  5 Car.
    26 = AV-N               (N)  =>  5 Car.
    27 = AV-N               (N)  =>  5 Car.
    28 = AV-N               (N)  =>  5 Car.
    29 = AV-N               (N)  =>  5 Car.
    30 = AV-N               (N)  =>  5 Car.
->  31 = LNSEQNC.           (L)  =>  5 Car.

SSM Inc. (Source: LIST                 , 07/07/92)
```

```
            Liste des
       Elements d'Information
       du Fichier OBJECTV
       ..........................

    Inf#      Nom
    ===========================
 ->  1 = MEC #               (A)  =>  4 Car.
 >   2 = MEC #               (A)  =>  1 Car.
     3 = MEC #               (A)  =>  2 Car.
     4 = EN.TITLE            (T)  => 70 Car. X 2
     5 = EN. TEXT            (T)  => 70 Car. X 4
     6 = EN. DATE            (D)  =>  8 Car.
     7 = TITRE FR            (T)  => 70 Car. X 2
     8 = TEXTE FR            (T)  => 70 Car. X 4
     9 = DATE FR             (D)  =>  8 Car.
    10 = FUNDS LY            (L)  => 11 Car.
    11 = FUNDS CY            (L)  => 11 Car.
    12 = FUNDS NY            (L)  => 11 Car.
    13 = AV-F                (L)  => 11 Car.
    14 = AV-F                (L)  => 11 Car.
    15 = AV-F                (L)  => 11 Car.
    16 = LANGUAGE            (C)  => 10 Car.
     .          .             .                0-UNDEF.     1-FRENCH     2-ENGLIS
    17 = AV-C                (C)  => 10 Car.
     .          .             .                0-LIBRE
    18 = AV-C                (C)  => 10 Car.
     .          .             .                0-LIBRE
    19 = AV-C                (C)  => 10 Car.
     .          .             .                0-LIBRE
    20 = ME-PART3            (A)  =>  2 Car.
    21 = AV-F                (L)  => 11 Car.
 -> 22 = W/ORD,#.            (L)  =>  5 Car.
    23 = ABR/TTL             (A)  => 30 Car.
    24 = AV-N                (N)  =>  5 Car.
    25 = AV-N                (N)  =>  5 Car.
    26 = AV-N                (N)  =>  5 Car.
    27 = LAST IN.            (L)  =>  5 Car.
    28 = K-REFER             (L)  =>  5 Car.
    29 = J-REFER.            (L)  =>  5 Car.
    30 = HNSEQNC.            (L)  =>  5 Car.

SSM Inc. (Source: OBJECTV         , 87/07/02)
```

```
         Liste des
     Elements d'Information
     du Fichier SCIENCE ADDENDUM
    -------------------------

  Inf#       Nom
  ============================
   1 = SEQ #             (N)  =>  5 Car.
   2 = GEN.ACTIVITY      (A)  => 40 Car.
   3 = ACTIVITY          (T)  => 60 Car.
   4 = SCIENCE TYPE      (A)  => 15 Car.
   5 = AVAIL-1           (L)  => 10 Car.
-> 6 = No. de Sequence   (L)  => 10 Car.

SSM Inc. (Source: SCIENCE ADDENDUM, 86/12/04)
```

```
             Liste des
         Elements d'Information
         du Fichier MODE COD
        .........................

      Inf#      Nom
      ==========================
 ->    1 = MODE COD         (A)  =>  1 Car.
       2 = MODE TTL         (A)  => 40 Car.
       3 = EN. DATE         (D)  =>  8 Car.
       4 = TITRE MD         (A)  => 40 Car.
       5 = FR. DATE         (D)  =>  8 Car.
 ->    6 = #SEQ/LST         (N)  =>  5 Car.
       7 = MODE             (A)  =>  2 Car.
       8 = WGHT/FACTOR      (L)  => 11 Car.
       9 = OPER. PL         (L)  => 11 Car.
 ->   10 = UNSEQNC.         (L)  =>  5 Car.

  SSM Inc. (Source: MODE COD         , 07/07/02)
```

```
          Liste des
     Elements d'Information
     du Fichier FACTURE
     ............................

  Inf#       Nom
  ============================
>  1 = #CONTRAT          (N)  =>  5 Car.
   2 = ENVOI             (D)  =>  8 Car.
   3 = #FACTURE          (T)  => 10 Car.
   4 = DISP-1            (T)  => 30 Car.
   5 = ADMREG            (A)  => 11 Car.
   6 = DISP-2            (T)  =>  6 Car.
   7 = C-REFER.          (L)  => 10 Car.
   8 = DISP-3            (N)  =>  5 Car.
   9 = INC.HOLD          (L)  => 10 Car.
  10 = MONTANT           (L)  => 10 Car.
  11 = RECUE             (D)  =>  8 Car.
  12 = CONTROLE          (C)  => 10 Car.
   .            .         .                0-ENVOYE     1-RECU      2-PREINVOI
  13 = DISP-4            (A)  =>  6 Car.
  14 = DATE FAC          (A)  => 11 Car.
  15 = DISP-5            (A)  => 13 Car.
  16 = TYP - NSI - Ref.  (L)  => 10 Car.
-> 17 = C-REFER.         (L)  => 10 Car.
  18 = DATE PREINVOICE   (D)  =>  8 Car.
  19 = FNSEQNC.          (L)  =>  5 Car.

SSM Inc. (Source: FACTURE          , 87/07/02)
```

```
        Liste des
     Elements d'Information
     du Fichier REQUISIT
     ----------------------------

   Inf#      Nom
   ============================
->  1 = #CONTRAT          (N)  =>  5 Car.
    2 = DISP-1            (A)  =>  6 Car.
    3 = DISP-2            (A)  => 13 Car.
    4 = I-REFER.          (L)  => 10 Car.
    5 = TYPEREQ           (C)  => 10 Car.
    .           .          .                  0-NOUVEAU     1-MOD#1       2-MOD#2
    .           .          .                  3-MOD#3       4-MOD#4       5-MOD#5
    .           .          .                  6-MOD#6       7-MOD#7       8-MOD#8
    .           .          .                  9-MOD#9      10-MOD#10     11-AGREEMEN
    .           .          .                 12-RFP        13-SC
    6 = DISP-3            (T)  => 30 Car.
    7 = DISP-4            (T)  => 30 Car.
    8 = DISP-5            (A)  => 11 Car.
    9 = ACCRECP           (D)  =>  8 Car.
   10 = ENVOI             (D)  =>  8 Car.
   11 = RECU              (D)  =>  8 Car.
   12 = TELEX             (D)  =>  8 Car.
   13 = CONTROLE          (C)  => 10 Car.
    .           .          .                  0-ENVOYE      1-RECU
   14 = COMMENT           (T)  => 30 Car.
   15 = C-REFER.          (L)  => 10 Car.
-> 16 = D-REFER.          (L)  => 10 Car.
   17 = TYP - NSI - Ref.  (L)  => 10 Car.
   18 = MONTANT           (L)  => 10 Car.
   19 = DISP-7            (A)  =>  6 Car.
-> 20 = QNSEGNC.          (L)  => 12 Car.

CSM Inc. (Source: REQUISIT        , 07/07/02)
```

```
            Liste des
         Elements d'Information
         du Fichier DIVISION
        -----------------------

     Inf#       Nom
     ==========================
 ->   1 = SEQ.REF #          (N)  =>  5 Car.
      2 = LIBRE-1            (T)  =>  5 Car.
      3 = LIBRE-2            (T)  => 10 Car.
      4 = LIBRE-3            (T)  => 20 Car.
      5 = LIBRE-4            (T)  => 40 Car.
      6 = DIVISION NAME      (T)  => 30 Car.
      7 = LIBRE-5            (T)  => 40 Car.
      8 = LIBRE-6            (T)  => 30 Car.
      9 = LIBRE-7            (T)  => 30 Car.
     10 = LIBRE-8            (T)  => 20 Car.
     11 = LIBRE-9            (T)  =>  7 Car.
     12 = LIBRE-10           (T)  =>  8 Car.
     13 = LIBRE-11           (C)  => 10 Car.
      .            .          .
      .            .          .                0-AIP/RFP    1-TDC        2-OTHFEDGV
      .            .          .                3-UNI/INS    4-NONPRINS   5-CDNCONSU
      .            .          .                6-CDNMANUF   7-CDNOPERA   8-CDNOTHER
                                               9-FOREIGN
 -> 14 = NUMERO DE SEQ.      (L)  =>  5 Car.

SSM Inc. (Source: DIVISION          , 85/08/12)
```

```
          Liste des
      Elements d'Information
      du Fichier TYPE OF ORGANISM
     -------------------------

     Inf#      Nom
     ============================
 ->   1 = ORGN. TYPE #      (N)  => 5 Car.
      2 = LIBRE-1           (T)  => 5 Car.
      3 = LIBRE-2           (T)  => 10 Car.
      4 = LIBRE-3           (T)  => 20 Car.
      5 = ORGANISATION TYP  (T)  => 40 Car.
      6 = LIBRE-4           (T)  => 30 Car.
      7 = LIBRE-5           (T)  => 40 Car.
      8 = LIBRE-6           (T)  => 30 Car.
      9 = LIBRE-7           (T)  => 30 Car.
     10 = LIBRE-8           (T)  => 20 Car.
     11 = LIBRE-9           (T)  =>  7 Car.
     12 = LIBRE-10          (T)  =>  8 Car.
     13 = ORGN. TYPE CODE   (C)  => 10 Car.
      .        .             .
      .        .             .                0-AIP/RFP   1-TDC       2-OTHFEDGV
      .        .             .                3-UNI/INS   4-NONPRINS  5-CDNCONSU
      .        .             .                6-CDNMANUF  7-CDNOPERA  8-CDNOTHER
                                              9-FOREIGN
 ->  14 = NO. SEQUENCE      (L)  =>  5 Car.

SSM Inc. (Source: TYPE OF ORGANISM, 85/08/12)
```

```
           Liste des
        Elements d'Information
        du Fichier UTL CART
        ..........................

     Inf#      Nom
     ===========================
 ->   1 = NOPROJET            (N)  =>  5 Car.
      2 = MOIS                (C)  => 10 Car.
      .           .            .
      .           .            .             0 UNDEF        1-AVRIL       2-MAI
      .           .            .             3-JUIN         4-JUILLET     5-AOUT
      .           .            .             6-SEPTEMBR     7-OCTOBRE     8-NOVEMBRE
      .           .            .             9-DECEMBRE    10-JANVIER    11-FEVRIER
                                            12-MARS        13-13-IEM     14-14-IEM
      3 = DATE JRS            (D)  =>  8 Car.
      4 = TYPE                (C)  => 10 Car.
      .           .            .
      .           .            .             0-UNDEF        1-CONT.ACT    2-CONT.COM
                                             3-PROJ.ACT     4-PROJ.COM
      5 = BGT AC              (L)  => 11 Car.
      6 = BGT AF              (L)  => 11 Car.
      7 = ACT-CY              (L)  => 11 Car.
      8 = CON - NSI - Ref.    (L)  => 10 Car.
 ->   9 = ORG - NSI - Ref.    (L)  => 10 Car.
     10 = CNT RSPB            (T)  =>  6 Car.
     11 = AUTRE-1             (C)  => 10 Car.
      .           .            .
                                             0-UNDEF        1-UNDEF
     12 = AUTRE-2             (C)  => 10 Car.
      .           .            .
                                             0-UNDEF        1-UNDEF
     13 = TYP - NSI - Ref.    (L)  => 10 Car.
     14 = AUTRE-4             (L)  => 11 Car.
     15 = AUTRE-5             (N)  =>  5 Car.
     16 = AUTRE-6             (N)  =>  5 Car.
     17 = AUTRE-7             (N)  =>  5 Car.
     18 = AUTRE-8             (N)  =>  5 Car.
     19 = AUTRE-9             (N)  =>  5 Car.
     20 = AUTRE-10            (N)  =>  5 Car.
     21 = AUTRE-11            (N)  =>  5 Car.
     22 = AUTRE-12            (N)  =>  5 Car.
     23 = AUTRE-13            (L)  => 11 Car.
     24 = AUTRE-14            (L)  => 11 Car.
     25 = AUTRE-15            (L)  => 11 Car.
     26 = AUTRE-16            (N)  =>  5 Car.
     27 = UNSEQNC.            (L)  =>  5 Car.

SSM Inc. (Source: UTL CART         , 07/07/02)
```

```
          Liste des
     Elements d'Information
     du Fichier EXPLICATION
    ------------------------

  Inf#      Nom
  ===========================
   1 = NOM D'EXEC       (A)  => 10 Car.
   2 = # SEQUENCE       (N)  =>  5 Car.
   3 = DATE ALTER       (D)  =>  8 Car.
   4 =                  (T)  => 60 Car. X 15

SSM Inc. (Source: EXPLICATION     , 85/08/12)
```

```
          Liste des
        Elements d'Information
        du Fichier CLASSIFICATION
        ............................

      Inf#      Nom
      ==========================
 ->    1 = PROJECT TITLE     (A)  => 30 Car.
       2 = ORIGIN            (C)  => 10 Car.
       .        .             .
                                              0-NO TSK/END 1-TASKED     2-ENDORSED
       3 = EXTERNAL/CONTRIB  (C)  => 10 Car.
       .        .             .
       .        .             .               0-           1-NONE/NEANT 2-YES/OUI
       .        .             .               3-UNDEF.     4-INDUSTRY   5-PROV./MUNI
                                              6-FOREIGN    7-OTHER
       4 = SOURCE/OF FUND    (C)  => 10 Car. X 4
       .        .             .
       .        .             .               0-UNDEF.     1-INDUSTRY   2-PROV./MUNI
                                              3-FOREIGN    4-OTHER
      5 = BENEFIT-AREA       (C)  => 10 Car. X 4
      .         .             .
      .         .             .               0-UNDEF.     1-SAFETY     2-ECONO/DEV
      .         .             .               3-SECURITY   4-E&H ACCES  5-OPER/COST
      .         .             .               6-SERVICE    7-CAPITAL $  8-ADVERS/IMP
      .         .             .               9-MAINT/COST10-ENERGY/CON11-PRODUC/EFF
      .         .             .              12-TRANS/ENRG13-DEV/POLICY14-ALTER/FUEL
      .         .             .              15-GUIDE/STAN16-TECH/BASE 17-DEV/RESUL.
                                             18-PROCUREMNT
      6 = I5#                (N)  =>  3 Car. X 4
      7 = AV-C               (C)  => 10 Car. X 4
      8 = USER OF RESULTS    (C)  => 10 Car.
      .         .             .
      .         .             .              0-UNDEF.     1-T/C        2-C/I OPER.
      .         .             .              3-T/C NONTDC 4-C/I MANUF. 5-FED.GOV'T
                                             6-MUNICIPAL  7-PROVINCE   8-OTHER
      9 = IMPACT AREA        (C)  => 10 Car.
      .         .             .
      .         .             .              0-UNDEF.     1-INTERCITY  2-INTRACITY
      .         .             .              3-NORTHERN   4-REMOTE     5-NATIONAL
      .         .             .              6-REGIONAL   7-INTERNATNL 8-OCEANS
                                             9-SPACE     10-OTHER
     10 = CONTRACTOR LANG.  (C)  => 10 Car.
      .         .             .
                                             0-UNDEF.     1-FRENCH     2-ENGLISH
     11 = CONTRACT TYPE     (C)  => 10 Car.
      .         .             .
      .         .             .              0-UNDEF      1-LTD EXP.   2-FIXED
                                             3-CEILING    4-STANDING
     12 = I10#              (N)  =>  3 Car.
     13 = I11#              (N)  =>  3 Car.
     14 = I3#               (N)  =>  3 Car.
     15 = EST CONTRIBUTN    (F)  => 14 Car. X 4
     16 = AV-F              (F)  => 14 Car. X 4
     17 = TOTAL CONTRUBUTN  (F)  => 14 Car.
     18 = AV-F              (F)  => 14 Car.
     19 = DESCRIPTION       (A)  => 30 Car. X 4
     20 = AV-A              (A)  => 10 Car.
     21 = PEF PRINT SWITCH  (C)  => 10 Car.
      .         .             .
                                             0-OFF        1-ON
     22 = CONTACT PERS.     (A)  => 20 Car.
     23 = DATE OF VISIT     (D)  =>  8 Car.
     24 = I2#               (N)  =>  3 Car.
     25 = I9#               (N)  =>  3 Car.
     26 = TELEPHON CONTACT  (A)  => 12 Car.
     27 = AV-N              (N)  =>  5 Car.
```

```
    Inf#      Nom
    ===========================
    28 = AV-L                (L)  => 14 Car.
    29 = AV-L                (L)  => 14 Car.
    30 = AV-L                (L)  => 14 Car.
    31 = AV-L                (L)  => 14 Car.
    32 = AV-L                (L)  => 14 Car.
    33 = AV-L                (L)  => 14 Car.
    34 = AV-L                (L)  => 14 Car.
    35 = AV-L                (L)  => 14 Car.
    36 = AV-L                (L)  => 14 Car.
    37 = SITE/VISIT          (C)  => 10 Car.
     .           .            .
                                             0-NO VISIT   1-TO VISIT   2-VISITED
    38 = PROVINCE            (C)  => 10 Car.
     .           .            .
     .           .            .               0-UNDEF.     1-YUKON/NW   2-B.C.
     .           .            .               3-ALBERTA    4-SASK       5-MANITOBA
     .           .            .               6-ONTARIO    7-QUEBEC     8-N.BRUNSW
                                              9-NOVA SCO  10-P.E.I.    11-NFLD
    39 = VILLE/CITY          (A)  => 20 Car.
    40 = TELEPHON (SITE)     (A)  => 12 Car.
    41 = ADRESSE 1           (A)  => 30 Car.
    42 = ADRESSE 2           (A)  => 30 Car.
    43 = ADRESSE 3           (A)  => 20 Car.
    44 = CODE PSTL           (A)  =>  7 Car.
    45 = DETAILS             (T)  => 30 Car. X 4
 -> 46 = No de SEQUENCE .    (L)  => 10 Car.

SSM Inc. (Source: CLASSIFICATION  ; 87/07/02)
```

```
          Liste des
      Elements d'Information
      du Fichier FINANCE
      ..............................

   Inf#      Nom
   ==========================
     1 = PROJECT #          (N)   =>  5 Car.
     2 = SPON/EXP.DT        (D)   =>  8 Car.
     3 = CONTRACT/TER       (D)   =>  8 Car.
     4 = AVAIL - DATE       (D)   =>  8 Car.
     5 = AVAIL - DATE       (D)   =>  8 Car.
     6 = AVAIL - DATE       (D)   =>  8 Car.
     7 = AVAIL - DATE       (D)   =>  8 Car.
     8 = REQ.SPONS.DATE     (D)   =>  8 Car.
     9 = SPONS.SIGN DATE    (D)   =>  8 Car.
    10 = HOLDBACK/MINM.     (L)   => 11 Car.
    11 = HOLDBACK/%TAGE     (L)   => 11 Car.
    12 = DSS 3%             (L)   => 11 Car.
    13 = AVAIL - LONG       (L)   => 11 Car.
    14 = AVAIL - LONG       (L)   => 11 Car.
    15 = AVAIL - LONG       (L)   => 11 Car.
    16 = A.G.C. DU M.A.S.   (A)   => 20 Car.
    17 = CONTRACT SERIAL#   (A)   => 20 Car.
    18 = PAYMNT/TYPE        (C)   => 10 Car.
     .        .              .
     .        .              .                 0-STANDARD   1-TIES        2-STAND.OFFR
                                               3-4          4-4           5-5
    19 = AVAIL - CODE       (C)   => 10 Car.
    20 = AVAIL - CODE       (C)   => 10 Car.
    21 = AVAIL - CODE       (C)   => 10 Car.
    22 = AVAIL FILE REF#    (L)   => 10 Car.
    23 = AVAIL FILE REF#    (L)   => 10 Car.
    24 = AVAIL FILE REF#    (L)   => 10 Car.
    25 = AVAIL FILE REF#    (L)   => 10 Car.
    26 = CRS - NSI - Ref.   (L)   => 10 Car.
    27 = TYP - NSI - Ref.   (L)   => 10 Car.
    28 = CON - NSI - Ref.   (L)   => 10 Car.
    29 = No. de Sequence    (L)   => 10 Car.

CSM Inc. (Source: FINANCE          , 87/07/02)
```

```
               Liste des
          Elements d'Information
          du Fichier EXTEN.TIES
          .............................

      Inf#       Nom
      ===========================
 ->    1 = PROJET #          (N)  =>  5 Car.
       2 = DATE/DEBUT#       (D)  =>  8 Car.
       3 = DATE/FIN#         (D)  =>  8 Car.
       4 = AMNT. AUTH        (L)  => 11 Car.
       5 = $ A DATE          (L)  => 11 Car.
       6 = BALANCE           (L)  => 11 Car.
       7 = MNT RECUP         (L)  => 11 Car.
       8 = AUTH E&H          (L)  => 11 Car.
 ->    9 = TIES#             (A)  =>  8 Car.
      10 = # SERIE CONT      (A)  => 20 Car.
      11 = HOLD. TOTAL       (L)  => 14 Car.
      12 = HOLD. CUMUL.      (L)  => 14 Car.
      13 = DUREE 60J(+-)     (C)  => 10 Car.
       .         .            .               0-UNDEF.    1-+ DE 60   2-- DE 60
       .         .            .               3-60 JOURS
      14 = STATUT            (C)  => 10 Car.
       .         .            .               0-ACTIF     1-TERMINER  2-AUTRE
      15 = TITRE             (A)  => 29 Car.
      16 = TIES OFF.         (A)  => 11 Car.
      17 = CON - NSI - Ref.  (L)  => 10 Car.
      18 = IDE - NSI - REF.  (L)  => 10 Car.
      19 = ORG - NSI - REF.  (L)  => 10 Car.
      20 = AVAIL-1           (L)  => 10 Car.
      21 = MEC               (A)  =>  4 Car.
      22 = AVAIL-2           (L)  => 14 Car.
      23 = AVAIL-3           (L)  => 14 Car.
      24 = CATEGORIE         (C)  => 10 Car.
       .         .            .               0-TIES      1-CAPAFE    2-ON
      25 = AVAIL-5           (N)  =>  5 Car.
 ->   26 = No de SEQUENCE    (L)  => 10 Car.

   SSM Inc. (Source: EXTEN.TIES      , 87/07/02)
```

```
        Liste des
     Elements d'Information
     du Fichier COMPLETION PHASE
     -----------------------

  Inf#      Nom
  ==========================
   1 = PROJ#            (N)  =>  5 Car.
   2 = CONTACT          (A)  => 15 Car.
   3 = RPT F            (N)  =>  5 Car.
   4 = RPT E            (N)  =>  5 Car.
   5 = LANG.FINAL       (C)  => 10 Car.
   .       .             .               0-UNDEFF.     1-CONTRACTOR 2-BOTH LANG.
   6 = I5 (CODE#)       (N)  =>  3 Car.
   7 = SUM-F            (N)  =>  5 Car.
   8 = SUM-E            (N)  =>  5 Car.
   9 = TRANS RSPB       (C)  => 10 Car.
   .       .             .
   .       .             .               0-UNDEFF      1-TDC        2-CONTRACTOR
                                         3-NOT TTRANSL
  10 = TRADUCT'N        (C)  => 10 Car.
   .       .             .
   .       .             .               0-NONDEEF.    1-CDT        2-CONT'NT
                                         3-NIL
  11 = I12+13 OCCUR.    (N)  =>  5 Car.
  12 = DELIVRABL        (C)  => 10 Car. X I11
   .       .             .               0-            1-REPORTS    2-AUDIO
   .       .             .               3-DRAWIINGS   4-SOFT/DATA  5-EQUIP/MAT
   .       .             .               6-PROTOTTYPE  7-ARTWORK
  13 = LIVRABLES        (C)  => 10 Car. X I11
   .       .             .               0-            1-RAPPORTS   2-AUDIO
   .       .             .               3-PLAN        4-LOGICIEL   5-EQUPI/MAT
   .       .             .               6-PROTOOTYPE  7-ILLUSTRATN
  14 = SPEC MATERAL     (C)  => 10 Car.
   .       .             .               0-UNDEFF.     1-YES        2-NO
  15 = I14 (CODE#)      (N)  =>  3 Car.
  16 = I17+18 OCCUR.    (N)  =>  5 Car.
  17 = TDC SERVICES FOR (C)  => 10 Car. X I16
   .       .             .               0-            1-CONSULT    2-GRAPH-PRNT
   .       .             .               3-ILLUSSTRATN 4-TEXT PROC. 5-EDITING
   .       .             .               6-PRINTTING   7-MARKETING
  18 = SERVICE DU CDT   (C)  => 10 Car. X I16
   .       .             .               0-            1-CONSULT    2-GRAPHISME
   .       .             .               3-ILLUSSTRATN 4-TRAIT/TEXT 5-REVISION
   .       .             .               6-IMPREESSION 7-COMMERCIAL
  19 = REC F            (N)  =>  5 Car.
  20 = REC E            (N)  =>  5 Car.
  21 = SUM REC F        (N)  =>  5 Car.
  22 = SUM REC E        (N)  =>  5 Car.
  23 = I12+13 (CODE#)   (N)  =>  5 Car. X I11
  24 = I17+18 (CODE#)   (N)  =>  5 Car. X I16
  25 = RPT B            (N)  =>  5 Car.
  26 = SUM B            (N)  =>  5 Car.
  27 = REC B            (N)  =>  5 Car.
  28 = SUM REC B        (N)  =>  5 Car.
  29 = RDF REC          (D)  =>  8 Car.
  30 = SUM REC          (D)  =>  8 Car.
  31 = DETAILS (P.O.)   (D)  =>  8 Car.
  32 = AV-D             (D)  =>  8 Car.
  33 = AV-D             (D)  =>  8 Car.
```

```
   Inf#      Nom
   -========================
   34 = AV-D              (D)  =>  8 Car.
   35 = AV-D              (D)  =>  8 Car.
   36 = STAGE DATE        (D)  =>  8 Car. X 10
   37 = AV-C              (C)  => 10 Car.
    .           .          .               0-UNDEF.      1-YES         2-NO
    8 = INTER#PAGE        (N)  =>  5 Car.
   39 = RPT#PAGE          (N)  =>  5 Car.
   40 = SUM#PAGE          (N)  =>  5 Car.
   41 = DRAFT RPT.        (C)  => 10 Car.
    .           .          .               0-NOTRECEVED 1-DRAFT 1     2-DRAFT 2
    .           .          .               3-DRAFT 3
   42 = TDC SER.REQUIRED (C)  => 10 Car.
    .           .          .               0-UNDEF.      1-YES         2-NO
   43 = I42 (CODE#)       (N)  =>  3 Car.
   44 = CONT.RSPB.TRANSL (C)  => 10 Car.
    .           .          .               0-UNDEF.      1-YES         2-NO
   45 = I44 (CODE#)       (N)  =>  3 Car.
   46 = LANG.INTERIM      (C)  => 10 Car.
    .           .          .               0-UNDEF.      1-CONTRACTOR 2-BOTH LANG.
   47 = I46 (CODE#)       (N)  =>  3 Car.
   48 = AV-C              (C)  => 10 Car.
    .           .          .               0-UNDEF.      1-YES         2-NO
   49 = AV-N              (N)  =>  3 Car.
   50 = STAGE             (C)  => 10 Car.
    .           .          .               0-NOTRECEV    1-RECEIVED    2-ACKNOWLEDG
    .           .          .               3-REVIEW      4-REV. DRAFT 5-PRINTED
    .           .          .               6-CLOSE-OUT   7-DISTRIBT'N 8-ARCHIVE
   51 = INTER F           (N)  =>  5 Car.
   52 = INTER E           (N)  =>  5 Car.
   53 = INTER B           (N)  =>  5 Car.
   54 = AV-C              (C)  => 10 Car.
    .           .          .               0-UNDEF.      1-YES         2-NO
   55 = MODE (FR.)        (C)  => 10 Car.
    .           .          .               0-NON CODE    1-V/FERREES   2-MARITIME
    .           .          .               3-AERIEN      4-ROUTIER     5-URBAIN
    .           .          .               6-HORS ROUTE 7-MULTIMODES 8-TLV
    .           .          .               9-HANDICAPES10-SOUTIEN
-> 56 = CON - NSI - Ref. (L)  => 10 Car.
   57 = IDE - NSI - Ref. (L)  => 10 Car.
   58 = ORG - NSI - Ref. (L)  => 10 Car.
   59 = EFI - NSI - Ref. (L)  => 10 Car.
   60 = PUB - NSI - Ref. (L)  => 10 Car.
   61 = REF#              (L)  => 10 Car.
   62 = DIV - NSI - Ref. (L)  => 10 Car.
   63 = REF#              (L)  => 10 Car.
   64 = 3E TP#            (A)  => 10 Car.
   65 = 2E TP#            (A)  => 10 Car.
   66 = 1IER TP#          (A)  => 10 Car.
   67 = REF# - 3E TP#     (L)  => 10 Car.
   68 = REF# - 2E TP#     (L)  => 10 Car.
   69 = REF# - 1IER TP#   (L)  => 10 Car.
   Inf#      Nom
   ============================
   70 = No de SEQUENCE . (L)  => 10 Car.

SSM Inc. (Source: COMPLETION PHASE, 87/06/23)
```

```
           Liste des
        Elements d'Information
        du Fichier PUBLCT'N
       -------------------------

      Inf#      Nom
      ==========================
       1 = # DE TP          (A)  => 10 Car.
    -> 2 = TITRE            (T)  => 50 Car. X 3
    -> 3 = CONTRAT          (N)  =>  5 Car.
    -> 4 = DOSSIER          (A)  => 14 Car.
       5 = STATUT           (C)  => 10 Car.
       .          .          .
                                               0-INDEF.      1-PUBLIE      2-ATTENTE
    -> 6 = NOM CIE          (A)  => 70 Car.
       7 = ADMIN.           (A)  => 20 Car.
       8 = DIRECT'N         (A)  =>  5 Car.
       9 = BRANCHE          (A)  =>  5 Car.
   -> 10 = NOM OFF          (A)  => 16 Car.
      11 = PREN.OFF         (A)  => 10 Car.
      12 = NOM GEST         (A)  => 16 Car.
      13 = PREN.GES         (A)  => 10 Car.
      14 = DISP-1           (A)  => 20 Car.
      15 = STAT.RPT         (C)  => 10 Car.
       .          .          .
                                               0-INDEF.      1-DRAFT       2-FINAL
       .          .          .
                                               3-3
      16 = TYPE RPT         (C)  => 10 Car.
       .          .          .
                                               0-INDEF.      1-SOMMAIRE    2-FINAL
       .          .          .
                                               3-EVOLUT'N    4-4           5-5
      17 = REPETITF         (C)  => 10 Car.
       .          .          .
                                               0-INDEF.      1-OUI         2-NON
      18 = INTERNE          (C)  => 10 Car.
       .          .          .
                                               0-INDEF.      1-OUI         2-NON
      19 = REF. #TP         (A)  => 10 Car. X 3
      20 = DATE RPT         (D)  =>  8 Car.
      21 = RECOMMD          (D)  =>  8 Car.
      22 = ACCESSIB         (C)  => 10 Car.
       .          .          .
                                               0-INDEF.      1-OUI         2-NON
      23 = SECURITE         (C)  => 10 Car.
       .          .          .
                                               0-INDEF.      1-TOP-SEC     2-SECRET
       .          .          .
                                               3-CONFID.     4-PUBLIQUE    5-AUTRE
      24 = DISPONIB         (C)  => 10 Car.
       .          .          .
                                               0-INDEF.      1-OUI         2-NON
      25 = DATE DIS         (D)  =>  8 Car.
      26 = LOCATION         (A)  => 20 Car.
   -> 27 = DATE APP         (D)  =>  8 Car.
   -> 28 = REF.I2(2         (T)  => 50 Car.
   -> 29 = REF.I2(3         (T)  => 50 Car.
      30 = EMPLACEM         (A)  => 10 Car.
      31 = MATRICE          (C)  => 10 Car.
       .          .          .
                                               0-INDEF.      1-INEXIST     2-IMPRIM.
       .          .          .
                                               3-RECU
      32 = LIEU MAT         (C)  => 10 Car.
       .          .          .
                                               0-INDEF.      1-TDC         2-EXTER.
       .          .          .
                                               3-AUTRE
      33 = REIMPRES         (C)  => 10 Car.
       .          .          .
                                               0-INDEF.      1-OUI         2-NON
      34 = DATE REI         (D)  =>  3 Car.
      35 = RECU LE          (D)  =>  8 Car.
    Inf#      Nom
    ==========================
    36 = 1ER AVIS          (D)  =>  8 Car.
    37 = 2EM AVIS          (D)  =>  8 Car.
    38 = 3EM AVIS          (D)  =>  8 Car.
    39 = NBS. FIN          (N)  =>  5 Car.
    40 = NBS. SOM          (N)  =>  5 Car.
    41 = # REQUIS          (A)  =>  6 Car.
    42 = EXT - NSI - Ref.  (L)  => 10 Car.
    43 = MOD SUBJ          (C)  => 10 Car.
     .        .             .                0-AIR        1-HIGHWAY    2-MARINE
     .        .             .                3-MULTIMOD   4-OFFD/PIP   5-RAIL
     .        .             .                6-TLVTECH    7-URBAN      8-HANDICAP
     .        .             .                9-PROG.SUP  10-UNDEF.
    44 = MAILING           (C)  => 10 Car.
     .        .             .                0-INDEF.     1-OUI        2-NON
    45 = SEC - NSI - Ref.  (L)  => 10 Car.
 -> 46 = PNSEQNC.          (L)  =>  5 Car.

 SSM Inc. (Source: PUBLCT'N        , 87/06/23)
```

```
          Liste des
      Elements d'Information
      du Fichier EQUIPMENT
     -------------------------

   Inf#      Nom
   =========================
    1 = PROJ#               (N)  =>  5 Car.
    2 = DESCRIPTION         (A)  => 30 Car.
    3 = MODEL #             (A)  => 10 Car.
    4 = SERIAL #            (A)  => 10 Car.
    5 = LOCATION            (A)  => 10 Car.
    6 = QUANTITY            (N)  =>  5 Car.
    7 = $ VALUE             (F)  => 11 Car.
    8 = RETURN              (D)  =>  8 Car.
    9 = STORAGE END         (D)  =>  8 Car.
   10 = P.O. RESPONSIBLE    (A)  => 11 Car.
   11 = DISPOSITION         (C)  => 10 Car.
    .          .             .                0-UNDEF.     1-CROWN/A    2-UTILIS/TDC
    .          .             .                3-STORAGE    4-OTHER
   12 = AVAIL-C             (C)  => 10 Car.
    .          .             .                0-0
   13 = REF #               (L)  => 14 Car.
   14 = REF #               (L)  => 14 Car.
   15 = REF #               (L)  => 14 Car.
   16 = REF #               (L)  => 14 Car.
   17 = No de SEQUENCE .    (L)  => 10 Car.

SSM Inc. (Source: EQUIPMENT        , 87/06/23)
```

```
              Liste des
          Elements d'Information
          du Fichier EXTENDTP
         ------------------------

       Inf#      Nom
       ===========================
        1 = # DE TP            (A)  => 10 Car.
        2 = INVSOLDE           (N)  =>  5 Car.
        3 = EQUIPMNT           (C)  => 10 Car.
        .           .           .
                                                0-INDEF.      1-OUI        2-NON
        .           .           .
                                                3-3           4-4          5-5
        4 = DISP-1             (C)  => 10 Car.
        .           .           .
                                                0-0
        5 = DISP-2             (C)  => 10 Car.
        .           .           .
                                                0-0
        6 = DISP-3             (C)  => 10 Car.
        .           .           .
                                                0-0
        7 = DISP-4             (D)  =>  8 Car.
        8 = DISP-5             (D)  =>  8 Car.
        9 = # TRANS            (N)  =>  5 Car.
       10 = QT.MAXIN           (N)  =>  5 Car.
       11 = QT.MINIM           (N)  =>  5 Car.
       12 = DISP-9             (N)  =>  5 Car.
       13 = DISP-10            (N)  =>  5 Car.
       14 = DISP-11            (N)  =>  5 Car.
       15 = DISP-12            (N)  =>  5 Car.
    -> 16 = RAPIDETP           (A)  =>  5 Car.
       17 = DISP-14            (A)  => 50 Car.
       18 = DISP-15            (A)  => 50 Car.
       19 = DISP-16            (A)  => 25 Car.
       20 = DISP-17            (A)  => 25 Car.
       21 = DISP-18            (A)  => 10 Car.
       22 = DISP-19            (A)  => 10 Car.
       23 = DISP-20            (A)  => 10 Car.
       24 = DISP-21            (A)  => 10 Car.
       25 = DISP-22            (A)  => 10 Car.
       26 = INV - NSI - Ref.   (L)  => 10 Car.
       27 = PUB - NSI - Ref.   (L)  => 10 Car.
       28 = PNTR-25            (O)  => 10 Car.
       29 = PNTR-25            (O)  => 10 Car.
    -> 30 = ENSEQNC.           (L)  =>  5 Car.

SSM Inc. (Source! EXTENDTP          , 87/06/23)
```

```
             Liste des
         Elements d'Information
         du Fichier INVENT'R
        -------------------------

      Inf#      Nom
      ============================
       1 = # TP              (A)  => 10 Car.
       2 = DATE              (D)  =>  8 Car.
       3 = COMMENTR          (A)  => 20 Car.
       4 = ENTREE            (N)  =>  5 Car.
       5 = SORTIE            (N)  =>  5 Car.
       6 = SOLDE             (N)  =>  5 Car.
       7 = TYPE              (C)  => 10 Car.
       .         .           .                0-0          1-1          2-2
       .         .           .                3-3          4-4          5-5
       .         .           .                6-6          7-7          8-8
       .         .           .                9-9         10-10
       8 = AV-1              (C)  => 10 Car.
       .         .           .                0-0
       9 = # TRANS           (N)  =>  5 Car.
      10 = AV-2              (N)  =>  5 Car.
      11 = AV-3              (D)  =>  8 Car.
      12 = AV-4              (A)  => 10 Car.
      13 = AV-5              (A)  => 10 Car.
      14 = EXT - NSI - Ref.  (L)  => 10 Car.
   -> 15 = INSEQNC.          (L)  =>  5 Car.

   SSM Inc. (Source: INVENT'R        , 87/06/23)
```

APPENDIX C - SECTION 2

G/L FILES AND FIELDS

TABLE DES MATIERES

SECTION

Comment entrer et sortir de l'application G87 A

Procédure pour le grand livre B

Liste des menus J

Charte organisationnelle K

Définition des informations: charges financières L
- budgets M
- articles organiques N
- transactions O
- conférences P
- noms articles Q
- GFI cumulatifs R
- VAR bgt S
- paye T

Liste des programmes U

Comment faire les backups sur disquettes ou cassette V

Comment formatter des disquettes W

COMMENT ENTRER ET SORTIR DE L'APPLICATION G87

BUT: Le but de ce manuel est de fournir une aide-mémoire aux usagers du système de GRAND LIVRE.

Il contient les étapes à suivre pour accéder aux différents menus et ainsi exécuter les fonctions et rapports qui y sont mentionnés. Ce manuel n'est pas un cours sur le GRAND LIVRE, c'est-à-dire que l'usager doit être familié avec celui-ci pour pouvoir s'en servir adéquatement.

ACCES A L'APPLICATION G87

Les étapes suivantes sont requises pour accéder au système de GRAND LIVRE:

1.- Mettre l'imprimante en marche. Le bouton rouge, situé du côté droit, doit pointer vers l'arrière. A l'aide de la manivelle (du côté droit également), positionner le papier de façon à ce que la perforation de celui-ci soit juste au-dessus de la tête d'impression, à environ 1/8 pouce.

A partir de ce moment, ne plus se servir de la manivelle pour sortir le papier. Utilisez la procédure suivante:

a) peser sur le bouton identifié ON LINE, sur le devant de l'imprimante du côté gauche. Le voyant READY s'éteint alors.

b) peser sur le bouton FF pour faire avancer le papier d'une page. Vous pouvez peser plusieurs fois, auquel cas une page sera sautée pour chaque FF.

c) peser sur le bouton ON LINE pour remettre l'imprimante en circuit. Le voyant READY se rallume alors.

2.- Mettre en marche l'écran à l'aide du bouton rouge situé du côté droit, sous celui-ci. Il doit pointer vers la droite. Un voyant vert s'allume alors tout près de ce bouton.

3.- Mettre en marche l'ordinateur à l'aide du bouton rouge situé du côté droit, à l'arrière. Il doit pointer vers le haut.

4.- Attendre que l'ordinateur affiche le MENU D'ENTREE.
Ceci prend environ 2 minutes.

5.- Inscrire le chiffre 1 (utiliser celui au dessus de la lettre Q), ce qui correspond à la sélection GRAND LIVRE, puis faire 'return'.

6.- L'ordinateur affiche alors le message suivant:

Mot de passe

7.- Inscrire votre mot de passe puis faire 'return'.

8.- L'ordinateur affiche alors le message d'entrée de PROCOL puis le message suivant:

Application-

9.- Inscrire G87 puis faire 'return'.

10.- Suivre alors les instructions à l'écran.

11.- Pour sortir, inscrire le mot FIN suite au message COMMANDE=, puis faire 'return'.

12.- Vous sortez alors de PROCOL pour revenir au MENU D'ENTREE.

13.- Fermer alors l'imprimante. Le bouton rouge doit pointer vers le devant.

14.- Fermer l'ordinateur. Le bouton rouge doit pointer vers le bas.

15.- Fermer l'écran. Le bouton rouge doit pointer vers la gauche.

PROCEDURE POUR LE GRAND LIVRE

A) POUR PARTIR LA SESSION

Vous inscrivez G87 à la question APPLICATION?, puis faire 'return'.

B) L'UTILISATION DE G87

1.- Vous entrez automatiquement dans l'initialisation du mois. Vous initialiser votre mois comptable par un chiffre et après vous faites 'return'. Un chiffre corresponds à un mois.

1-AVRIL
2-MAI
3-JUIN
4-JUILLET
5-AOUT
6-SEPTEMBRE
7-OCTOBRE
8-NOVEMBRE
9-DECEMBRE
10-JANVIER
11-FEVRIER
12-MARS
13-P13
14-P14
15-P15

2.- Maintenant vous êtes dans le menu MAJ. Pour des explications de ce menu, voir la section D, explications des menus.

3.- D'autres menus sont accessibles. Pour voir la liste des menus, vous peser sur le point (.), puis faire 'return'.

4.- Pour sortir d'une fonction, vous inscrivez la lettre @ puis vous faites 'return'.

5.- Quand vous voulez terminer la session, vous inscrivez le mot FIN suite au message COMMANDE=, puis vous faites 'return'.

C) LES PROBLEMES

1.- Pour effacer une lettre, pesez sur la clé qui affiche une flèche vers la gauche. Cette clé est située juste au-dessus de la clé 'return'. Cette clé efface le caractère situé à gauche du curseur.

2.- Si vous vous trouvez dans le mode APPLICATION, inscrivez G87 puis faites 'return'.

3.- Si vous vous trouvez dans le mode COMMANDE, inscrivez le mot MENU, puis faites 'return'.

D) EXPLICATION DES MENUS

Dans cette application, il existe sept menus qui sont les suivants:

ANTOINE
MAJ
LISTE
CONFEREN
PAYROLL
RAPPORT
DEFINIT

Si vous voulez une explication d'une fonction de n'importe quel menu, vous inscrivez le chiffre qui corresponds à la fonction, suivit d'un ?, puis faire 'return'. On vous présentera alors une brève description de la fonction.

1) MENU ANTOINE

Le menu ANTOINE sert principalement à sortir le rapport de variance à la fin du mois.

2) MENU MAJ

Les fonctions de ce menu permettent de faire la mise à jour des fichiers.

N.B.: la fonction EXTENSION DES BUDGETS DU MOIS doit être faite au début de chaque mois.

3) MENU LISTE

Ce menu sert à sortir les listes pour balancer.

A) Après chaque 'posting' faire:

- LIQUIDATION DES CHARGES
- STATUT DES FONDS PAR CENTRE
- DERNIERES TRANSACTIONS DEPUIS (Ex.: 87/06/03, date du début du posting)
- ETAT DETAILLE PAR LOTS
- LIQUIDATION DES CHARGES
- RAPPORT DES CHARGES FINANCIERES (menu ANTOINE) ->P (fin d'année)

N.B.: Le total de la liste LIQUIDATION DES CHARGES doit balancer avec le total de la liste des STATUTS DES FONDS PAR CENTRES.

DURANT LE MOIS

- CONTROLE DES AVANCES DE VOYAGE
- CONTROLE DES AVANCES DE SALAIRE

POUR LE MOIS (RECONCILIATION), LISTES A SORTIR:

- SOLDE DES CHARGES
- FEUILLES DU GRAND LIVRE , transactions du mois courant

- DEPENSES CUMULATIVES PAR CENTTRE DE RESPONSABILITE, INCCLUANT LES 'HOLDBACKS' SOMMAIIRE DU G.L.
- LISTE DES CENTRES DE RESPONSARBILITE PAR ARTICLE ORGANIQUE
- RAPPORT DES CHARGES FINANCIERRES (menu ANTOINE) ->P
- APRES LE DERNIER POSTING DU MMOIS, FAIRE PRENDRE UNE COPIE DU MOIS.
- FAIRE SORTIR LE RAPPORT DE VARRIANCE (menu ANTOINE). REMETTRE LE MOIS COMPTABLE COMMBE MOIS COURANT.
- REINITIALISER LE MOIS D'AVANT,, PUIS FAIRE L'EXTENTION DES BUDGETS AVANT DE COMMENCER A PPOSTER DANS L'AUTRE MOIS.

4) MENU RAPPORT

Ce menu permet de faire l'impressioon des budgets pour la nouvelle année.

N.B.: ce rapport est imprimé au débbut de l'année.

5) MENU CONFERENCE

Ce menu sert à contrôler les conférrences.

6) MENU PAYROLL

Ce menu sert à contrôler la paye dess employés.

7) MENU DEFINITION

Ce menu sert à modifier une définitiion.

```
                    Liste des fichiers definis pour l'application G87
                    ------------------------------------------------

                 1 => cha pour le fichier charge [     29 Blocs]
                 110 Places - 22  Fiches = 88  Disponibles
                 2 => bud pour le fichier budget [     99 Blocs]
                 150 Places - 140  Fiches = 10  Disponibles
                 3 => art pour le fichier art.or [    158 Blocs]
                 600 Places - 538  Fiches = 62  Disponibles
                 4 => tra pour le fichier transa [    967 Blocs]
                 4311 Places - 0  Fiches = 4311  Disponibles
                 5 => XGR pour le fichier XGRAND [  2948 Blocs]
                 711 Places - 511  Fiches = 200  Disponibles
                 6 => kon pour le fichier konfer [     43 Blocs]
                 102 Places - 13  Fiches = 89  Disponibles
                 7 => nom pour le fichier nom ar [     26 Blocs]
                 114 Places - 37  Fiches = 77  Disponibles
                 8 => gfi pour le fichier gfi/cu [     39 Blocs]
                 100 Places - 19  Fiches = 81  Disponibles
                 9 => var pour le fichier varbgt [     99 Blocs]
                 150 Places - 0  Fiches = 150  Disponibles
                 11 => pay pour le fichier paye e [     69 Blocs]
                 100 Places - 57  Fiches = 43  Disponibles
Commande=
          Liste des
     Elements d'Information
     du Fichier paye employe
    ---------------------------

   Inf#        Nom
   ==========================
    1 = centre             (A)  =>   6 Car.
->  2 = employe            (T)  =>  15 Car.
    3 = art1               (A)  =>   4 Car.
    4 = salaire-brut       (L)  =>  12 Car. X 26
    5 = art2               (A)  =>   4 Car.
    6 = mnt.prime          (L)  =>  12 Car.
    7 = art3               (A)  =>   4 Car.
    8 = surtemps           (L)  =>  12 Car. X 26
    9 = libre-1            (A)  =>   4 Car.
   10 = libre-2            (L)  =>  12 Car.
   11 = libre-3            (A)  =>   4 Car.
   12 = libre-4            (L)  =>  12 Car.
   13 = charge #           (N)  =>   5 Car.
   14 = indice             (N)  =>   5 Car.
   15 = libre-5            (L)  =>  12 Car.
-> 16 = No de SEQUENCE .   (L)  =>  10 Car.

SSM Inc. (Source: paye employe     , 87/02/27)
```

```
                 Liste des
           Elements d'Information
           du Fichier varbgt
          ---------------------------

      Inf#       Nom
      ===========================
 ->    1 = centre                (A)   =>   6 Car.
 ->    2 = budget #              (A)   =>   4 Car.
       3 = budget #              (A)   =>   2 Car.
       4 = article2              (A)   =>   2 Car.
       5 = bud.lien              (A)   =>  10 Car.
       6 = budget $              (L)   =>  12 Car.
       7 = cumul                 (L)   =>  12 Car.
       8 = balance               (L)   =>  12 Car.
       9 = budget/m              (L)   =>  12 Car.  X 15
      10 = cumul/m               (L)   =>  12 Car.  X 15
      11 = balanc/m              (L)   =>  12 Car.  X 15
      12 = charge #              (N)   =>   5 Car.
      13 = NOM - NSI - Ref.  (L)   =>  10 Car.
      14 = mois                  (C)   =>  10 Car.
      15 = libre-n               (N)   =>   5 Car.
      16 = budget/a              (L)   =>  12 Car.
      17 = engageme              (L)   =>  12 Car.
      18 = libre-n               (N)   =>   5 Car.
      19 = libre-n               (N)   =>   5 Car.
      20 = libre-n               (N)   =>   5 Car.
      21 = libre-n               (N)   =>   5 Car.
      22 = prev dep              (L)   =>  12 Car.
      23 = libre-f               (L)   =>  12 Car.
      24 = libre-n               (N)   =>   5 Car.
      25 = libre-n               (N)   =>   5 Car.
      26 = libre-a               (A)   =>  10 Car.
      27 = No de SEQUENCE .  (L)   =>  10 Car.

 SSM Inc. (Source: varbgt             . 87/02/27)
```

```
              Liste des
        Elements d'Information
        du Fichier gfi/cum
        ---------------------------

     Inf#        Nom
     ===========================
-->    1 = # charge          (N)   =>  5 Car.
       2 = libre-n           (N)   =>  5 Car.
       3 = bgt/mois          (L)   => 12 Car.  X 12
       4 = bgt/cum           (L)   => 12 Car.  X 12
       5 = mois              (C)   => 10 Car.
       6 = CHA - NSI - Ref.  (L)   => 10 Car.
       7 = libre-f           (L)   => 12 Car.
       8 = libre-f           (L)   => 12 Car.
       9 = libre-n           (N)   =>  5 Car.
      10 = libre-n           (N)   =>  5 Car.
      11 = libre-f           (L)   => 12 Car.
      12 = libre-f           (L)   => 12 Car.
      13 = libre-f           (L)   => 12 Car.
      14 = libre-f           (L)   => 12 Car.
      15 = libre-f           (L)   => 12 Car.
      16 = libre-n           (N)   =>  5 Car.
      17 = No de SEQUENCE .  (L)   => 10 Car.

SSM Inc. (Source: gfi/cum             , 87/02/27)
```

```
          Liste des
      Elements d'Information
      du Fichier nom art.
    ------------------------

  Info       Nom
  ===========================
->  1 = # art.or             (A)  =>  2 Car.
    2 = francais             (T)  => 30 Car.
    3 = anglais              (T)  => 30 Car.
    4 = av-2                 (N)  =>  5 Car.
    5 = av-3                 (N)  =>  5 Car.
    6 = av-4                 (N)  =>  5 Car.
    7 = av-5                 (N)  =>  5 Car.
    8 = av-6                 (N)  =>  5 Car.
    9 = av-7                 (N)  =>  5 Car.
   10 = No de SEQUENCE .     (L)  => 10 Car.

GSM Inc. (Source: nom art.          , 87/02/27)
```

```
            Liste des
        Elements d'Information
        du Fichier konferen
        ------------------------------

     Inf#       Nom
     ==============================
       1 = date jrs             (D)  =>  2 Car.
       2 = mois                 (C)  => 10 Car.
       3 = montant              (L)  => 12 Car.
       4 = inscrip              (L)  => 12 Car.
       5 = voyage               (L)  => 12 Car.
       6 = a.p.v.               (T)  =>  5 Car.
       7 = mont.dat             (L)  => 12 Car.
       8 = bal.date             (L)  => 12 Car.
       9 = dateconf             (A)  => 10 Car.
      10 = titre                (T)  => 30 Car. X 2
      11 = endroit              (T)  => 15 Car.
      12 = nomempl              (T)  => 15 Car.
      13 = autre-1              (N)  =>  5 Car.
      14 = autre-2              (L)  => 12 Car.
      15 = autre-3              (L)  => 12 Car.
      16 = autre-4              (N)  =>  5 Car.
      17 = autre-5              (L)  => 12 Car.
      18 = No de SEQUENCE .     (L)  => 10 Car.

  SSM Inc. (Source: konferen           , 87/02/27)
```

```
          Liste des
        Elements d'Information
        du Fichier transac'
       ----------------------------

     Inf#       Nom
     ==============================
 ->   1 = date              (D)   => 8 Car.
 ->   2 = mois              (C)   => 10 Car.
 ->   3 = a.p.v.#           (A)   => 5 Car.
      4 = notes             (T)   => 20 Car.
 ->   5 = centre            (A)   => 6 Car.
 ->   6 = article           (A)   => 4 Car.
      7 = article           (A)   => 2 Car.
      8 = article2          (A)   => 2 Car.
 ->   9 = art.lien          (A)   => 10 Car.
     10 = activite          (N)   => 5 Car.
 ->  11 = contrat           (N)   => 5 Car.
 ->  12 = charge#           (N)   => 5 Car.
 ->  13 = batch#            (N)   => 5 Car.
     14 = montant           (L)   => 12 Car.
     15 = CHA - NSI - Ref.  (L)   => 10 Car.
     16 = ART - NSI - Ref.  (L)   => 10 Car.
     17 = bgt/cum           (L)   => 12 Car.
     18 = ces/cum           (L)   => 12 Car.
     19 = cum/cfi           (L)   => 12 Car.
     20 = kilometrage       (L)   => 12 Car.
     21 = prt$voya          (C)   => 10 Car.
     22 = av-4              (C)   => 10 Car.
     23 = date voyage       (D)   => 8 Car.
 ->  24 = No de SEQUENCE .  (L)   => 10 Car.

SEM Inc. (Source: transac'        , 87/02/27)
```

```
          Liste des
      Elements d'Information
      du Fichier art.org.
     ---------------------------

   Inf#       Nom
   ===========================
->  1 = centre               (A)  =>  6 Car.
->  2 = article              (A)  =>  4 Car.
->  3 = article              (A)  =>  2 Car.
    4 = article2             (A)  =>  2 Car.
->  5 = art.lien             (A)  => 10 Car.
    6 = centre               (A)  =>  6 Car.
    7 = budget#              (A)  =>  4 Car.
->  8 = bud.lien             (A)  => 10 Car.
    9 = cumul                (L)  => 12 Car.
   10 = cumul/m              (L)  => 12 Car. X 15
   11 = BUD - NSI - Ref.     (L)  => 10 Car.
   12 = NOM - NSI - Ref.     (L)  => 10 Car.
   13 = n/engage             (L)  => 12 Car.
   14 = av-3 (c)             (C)  => 10 Car.
-> 15 = No de SEQUENCE .     (L)  => 10 Car.

SSM Inc. (Source: art.org.         , 87/02/27)
```

```
            Liste des
        Elements d'Information
        du Fichier budget
       ---------------------------

     Inf#        Nom
     ===========================
 ->   1 = centre              (A)   =>  6 Car.
 ->   2 = budget #            (A)   =>  4 Car.
 ->   3 = budget #            (A)   =>  2 Car.
      4 = article2            (A)   =>  2 Car.
 ->   5 = bud.lien            (A)   => 10 Car.
      6 = budget $            (L)   => 12 Car.
      7 = cumul               (L)   => 12 Car.
      8 = balance             (L)   => 12 Car.
      9 = budget/m            (L)   => 12 Car. X 15
     10 = cumul/m             (L)   => 12 Car. X 15
     11 = balanc/m            (L)   => 12 Car. X 15
 ->  12 = charge #            (N)   =>  5 Car.
     13 = NOM - NSI - Ref. (L)   => 10 Car.
     14 = mois                (C)   => 10 Car.
     15 = libre-n             (N)   =>  5 Car.
     16 = budget/a            (L)   => 12 Car.
     17 = engageme            (L)   => 12 Car.
     18 = # ordonne           (N)   =>  5 Car.
     19 = libre-n             (N)   =>  5 Car.
     20 = libre-n             (N)   =>  5 Car.
     21 = libre-n             (N)   =>  5 Car.
     22 = prev dep            (L)   => 12 Car.
     23 = libre-f             (L)   => 12 Car.
     24 = libre-n             (N)   =>  5 Car.
     25 = libre-n             (N)   =>  5 Car.
     26 = libre-a             (A)   => 10 Car.
     27 = No de SEQUENCE . (L)   => 10 Car.

SSM Inc. (Source: budget          , 87/02/27)
```

```
            Liste des
      Elements d'Information
      du Fichier charge fi
     -------------------------

   Inf#       Nom
   ===========  ============
->  1 = charge #          (N)  => 3 Car.
    2 = budget            (L)  => 12 Car.
    3 = cumul             (L)  => 12 Car.
    4 = cum/mois          (L)  => 12 Car. X 15
    5 = balance           (L)  => 12 Car.
    6 = bgt/cum           (L)  => 12 Car.
    7 = av-2              (L)  => 12 Car.
    8 = av-2              (C)  => 10 Car.
    9 = No de SEQUENCE .  (L)  => 10 Car.

SSM Inc. (Source: charge fi         , 87/02/27)
```

```
                  Liste des
            Elements d'Information
            du Fichier gfi/cum
           ---------------------------

         Inf#       Nom
         ============================
  -->     1 = # charge          (N)   =>   5 Car.
          2 = libre-n           (N)   =>   5 Car.
          3 = bgt/mois          (L)   =>  12 Car.  X 12
          4 = bgt/cum           (L)   =>  12 Car.  X 12
          5 = mois              (C)   =>  10 Car.
          6 = CHA - NSI - Ref.  (L)   =>  10 Car.
          7 = libre-f           (L)   =>  12 Car.
          8 = libre-f           (L)   =>  12 Car.
          9 = libre-n           (N)   =>   5 Car.
         10 = libre-n           (N)   =>   5 Car.
         11 = libre-f           (L)   =>  12 Car.
         12 = libre-f           (L)   =>  12 Car.
         13 = libre-f           (L)   =>  12 Car.
         14 = libre-f           (L)   =>  12 Car.
         15 = libre-f           (L)   =>  12 Car.
         16 = libre-n           (N)   =>   5 Car.
         17 = No de SEQUENCE .  (L)   =>  10 Car.

SSM Inc. (Source: gfi/cum          , 87/02/27)
```

APPENDIX C: MIS DATABASES